711 Apparatus Leads

When working on de-energized apparatus normally energized above 5000 volts, phase to phase, the conductors between the open switch or fuse holders and the apparatus shall be grounded. When it is impracticable to ground as above, the taps shall be removed from the line with live-line tools.

712 Banked Secondaries

a) Where secondaries of transformers are banked or there is a possibility of a backfeed, the transformer secondary leads shall be disconnected in addition to removing primary fuses before any work is done on the transformer.

b) Primary line sectionalizing devices shall not be located between transformers with banked secondaries.

713 Current Transformer Secondaries

Before energizing a current transformer, a check shall be made to determine that the secondary circuit is closed. If the primary voltage exceeds 600 volts, phase to phase, the secondary shall also be grounded. Before working on instruments or other devices in a current transformer secondary circuit, the instruments or devices shall be short-circuited by jumpers, or approved test switches, so that the current transformer secondary circuit cannot be opened while working on the instruments or devices connected thereto. The ground lead, or the secondary circuit of an energized current transformer, shall never be disconnected or opened.

714 Portable Power Tools

a) Only approved power tools shall be used on erected poles, towers or structures.

1. Electric tools and all supply lines connected thereto shall be kept a safe distance under the level of all circuits or apparatus energized in excess of 600 volts, phase to phase unless the energized conductors or apparatus are covered with approved protective equipment before the voltage involved. Supply lines shall be adequately insulated and properly secured to prevent accidental contact with any conductor.

2. Air and hydraulic-driven tools shall not be used in any position where conducting parts thereof can come closer to any energized conductor than the "minimum working distances" prescribed in Rule 701 (h). Supply hoses shall be non-current carrying material throughout, properly maintained and, when in use, secured to prevent accidental contact with any energized conductor or apparatus.

711 Apparatus Leads

When working on de-energized apparatus normally energized above 5000 volts, phase to phase, the conductors between the open switch or fuse holders and the apparatus shall be grounded. When it is impracticable to ground as above, the taps shall be removed from the line with live-line tools.

712 Parallel Secondaries

a) Where secondaries of transformers are banked or there is a possibility of a backfeed, the transformer secondary leads shall be disconnected in addition to removing primary fuses before any work is done on the transformer.

b) Primary line sectionalizing devices shall not be located between transformers with banked secondaries.

713 Current Transformer Secondaries

Before energizing a current transformer, a check shall be made to determine that the secondary circuit is closed. If the primary voltage exceeds 600 volts, phase to phase, the secondary shall also be grounded. Before working on instruments or other devices in a current transformer secondary circuit, the instruments or devices shall be short-circuited by jumpers, or approved test switches, so that the current transformer secondary circuit cannot be opened while working on the instruments or devices connected thereto. The ground lead, or the secondary circuit of an energized current transformer, shall never be disconnected or opened.

714 Portable Power Tools

a) Only approved power tools shall be used on erected poles, towers or structures.

1. Electric tools and all supply lines connected thereto shall be kept a safe distance under the level of all circuits or apparatus energized in excess of 600 volts, phase to phase unless the energized conductors or apparatus are covered with approved protective equipment before the voltage involved. Supply lines shall be adequately insulated and properly secured to prevent accidental contact with any conductor.

2. Air and hydraulic-driven tools shall not be used in any position where conducting parts thereof can come closer to any energized conductor than the "minimum working distances" prescribed in Rule 701 (h), unless employee is insulatd or guarded, or energized part is insulated or guarded. Supply hoses shall be noncurrent carrying material throughout, properly maintained and, when in use, secured to prevent accidental contact with any energized conductor or apparatus.

3. Power saws shall be secured in an approved manner when used in an elevated position on an erected pole or structure.

b) Non-current carrying metal parts of portable electric power tools held in the hand while being operated shall be double insulated or grounded.

715 Metal Ratchet Hoists

Metal ratchet hoists shall not be attached to any energized conductor. Such hoists shall not be used in any position where conducting parts thereof can come closer to any energized conductor than the minimum working distances prescribed in Rule 701 h), unless the energized conductors are first covered with approved protective equipment for the voltage involved.

716 Use of Metallic Hoisting Lines

Metallic hoisting lines shall not be taken above the level of conductors or apparatus energized in excess of 600 volts, phase to phase, except when using pole setting equipment with a boom which extends above that level and then only when the conductors or apparatus are covered with approved protective equipment or are spread to prevent accidental contact.

717 Digging Holes

a) Employees shall stay "in the clear" of the revolving auger of the pole hole digger.

b) All pole holes, anchor holes, or excavations shall be properly guarded or covered when conditions warrant.

718 Climbing and Working on Poles

a) All poles and structures shall be carefully inspected before climbing to assure that they are in a safe condition for the work to be performed and that they are capable of sustaining the additional or unbalanced stresses to which they will be subjected.

b) Where poles or structures may be unsafe for climbing, they shall not be climbed until made safe by guying, bracing, or other adequate means.

c) Wires shall not be attached to or removed from a pole or structure until it is certain the pole or structure will withstand the altered strain.

d) Poles, except new poles, shall be thoroughly tested before they are climbed. If a pole is not strong enough to sustain a line mechanic's weight by reason of its condition or its placement (such as in soft ground) it shall be guyed or otherwise secured throughout the time any work is being performed on it. If the pole to be climbed is being replaced and the new pole is set adjacent to it, the old pole may be lashed to the new one in lieu of guying.

e) When poles are encountered which are unsafe to climb (badly chewed, wide cracks, shell rot, etc.) an alternate means of climbing shall be used (use belt around pole while climbing), or the use of an aerial basket shall be considered.

f) Employees shall not wear their climbers while driving or riding in vehicles or when doing work on the ground, on ladders (scaling) or on platforms in which the wearing of the climbers creates a hazard.

g) Employees shall keep gaffs on climbers within safe length limits (1-1/4 inches min.), properly shaped, and sharp.

h) Employees shall not work on an elevated pole or structure without first securing themselves with a safety strap.

i) Only approved belts and straps shall be used.

j) Metal hooks, chains, etc., for holding tools or tape shall not be attached to body belt. Leather or other non-conducting material shall be used for this purpose.

k) The safety strap shall not be put around a pole above the uppermost pole attachment position, except where pole top or attachment is above eye level. It shall not be used on pole steps, flat crossarm braces, insulator pins, conductors, rotten or otherwise weak crossarms or on attachments that are being moved. When it is necessary to attach to a crossarm, the safety strap shall never be placed beyond the outside crossarm attachment. It shall be so placed that it will not be cut by line equipment or twisted or fouled by material that may give way under strain.

l) Employees shall not trust their weight to guy wires, pins, braces, conductors, or other such equipment that might prove unstable.

m) When two or more employees are to work on the same pole at the same time, each shall reach the working position before the next leaves the ground. They shall descend one at a time.

n) When climbers are stored in the truck or tool room, they shall be placed where the sharp points will not damage other equipment or cause personal injury.

o) Before climbing poles or structures, employees must familiarize themselves with the circuits, voltages, apparatus thereon, and any unusual conditions which might present a hazard.

d) Poles, except new poles, shall be thoroughly tested before they are climbed. If a pole is not strong enough to sustain a line mechanic's weight by reason of its condition or its placement (such as in soft ground) it shall be guyed or otherwise secured throughout the time any work is being performed on it. If the pole to be climbed is being replaced and the new pole is set adjacent to it, the old pole may be lashed to the new one in lieu of guying.

e) When poles are encountered which are unsafe to climb (badly chewed, wide cracks, shell rot, etc.) an alternate means of climbing shall be used (use belt around pole while climbing), or the use of an aerial basket shall be considered.

f) Employees shall not wear their climbers while driving or riding in vehicles or when working on the ground, on ladders or on platforms in which the wearing of the climbers creates a hazard.

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o) Before climbing poles or structures, employees must familiarize themselves with the circuits, voltages, apparatus thereon, and any unusual conditions which might present a hazard.

719 Setting and Removing Poles

a) If any hole is left unfilled at the end of the work period, it shall be protected with substantial coverings.

b) All persons not engaged in pole-setting operations shall keep out of the work area.

c) No one shall be on a gin pole when it is being used to raise another pole.

d) While setting or removing poles between or near conductors energized above 600 volts:

1. If safe clearance cannot be maintained, the conductors shall be de-energized, covered with protective devices, spread, or a pole guard shall be used to minimize accidental contact.

2. Employees handling the butt of the pole shall wear rubber gloves whether or not cant hooks, peaveys or slings are used.

3. Until a pole is positively secured from moving against an energized conductor no one shall step on or off the truck, or touch any part of it without using rubber gloves if employee is standing on the ground.

4. Ground wires and bounded arms shall not be attached on the pole.

e) When pikes are used to hold poles in place while holes are being backfilled, the pikes shall be firmly grounded in all directions and shall not be removed until the back-fill is sufficient to hold. When a pole is being "canted" or "hooked" the pikes shall be held.

f) Employees shall not stand or pass under a suspended load or over or under a loaded winch line.

g) Employees engaged in handling or working on poles shall wear a City-approved, flame retardant shirt with the sleeves rolled down.

h) Hoisting equipment operators shall accept signals only from the employee specifically designated. The operator shall obey the stop signal given by anyone.

i) Guy ropes may be used to control the pole.

j) When piking poles, the pikes are not to be supported by the employees's body belt or safety strap. Cant hooks or suitable devices must be used to prevent rotation of poles.

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720 Loading, Unloading and Transporting Poles

a) The term "Pole Handling," as used in this section, includes the loading and unloading of transporting equipment in places of storage and the transportation and unloading of poles in the field.

b) Pole handling methods shall follow a set procedure, and each phase of each operation shall follow in its proper sequence.

c) Only methods, tools and equipment approved by the Public Service Department shall be used in pole handling operations.

d) Employees shall not stand or pass under a suspended load.

e) Employees engaged in handling poles shall wear suitable gloves and shall wear a shirt or jacket with the sleeves rolled down.

f) Hoisting equipment operators shall accept signals only from employees specifically designated and authorized.

721 Loading and Transporting Poles on Trucks, Trailers and Dollies

a) When poles are loaded on a flat bed, battens, bolsters or sleepers shall be used beneath the bottom layer.

b) When using bolsters with chocks, each layer above the bottom layer shall be secured with straps, tie wire or other approved means, except the top pole, which shall be held in place by the overall tie chain.

c) Pole dollies shall not be loaded in excess of registered allowable weight.

d) Approved type binders and bolster stakes where provided shall be used in securing a load to a pole dolly.

722 Pole Hauling and Storage

a) The trailing end of a load of poles shall be marked by a red flag during the day and a red light at night. As an additional precaution, warning flags or lights may be placed in the center of long loads. An employee shall be used for flagging when necessary.

b) If it becomes necessary to store poles at the location where they are to be set, they shall be so placed that they will not interfere with traffic.

c) If poles left on or near streets, highways or walkways overnight create a hazard, they shall be safeguarded by red lights, well-lighted warning signs, or flasher-equipped barricades.

d) Poles shall be so placed or blocked that they will not roll.

e) Employees shall not remain on a pole pile while poles are being hoisted.

f) Poles loaded on a truck or trailer shall be securely fastened in at least two places.

g) When a load of poles is within working distance of the ground, load binders shall be so installed that they can and will be operated by employees while standing on the ground.

h) Employees shall not ride pole dollies or trailers.

i) The wheels of the transporting vehicle shall be blocked or securely braked prior to loading.

j) When loading trailers, the first pole in the load (tongue pole) shall be loaded with the top pole in the direction of the tongue and it shall extend far enough ahead of the rest of the load to permit the attachment of the towing device to it; however, for hauling on narrow, winding roads, the tongue pole may be loaded butt forward.

k) Towing devices and safety chains used with trailers shall be of an approved type.

l) All pole trailers shall be loaded so that at least 150 lbs. tongue weight is on the towing vehicle's trailer hitch.

m) Loads shall be inspected and properly secured before being moved.

n) The safety chain or equivalent provided shall be secured between the pole trailer and the towing vehicle in a manner to comply with vehicle code.

o) Pole handling equipment shall be operated by qualified employees only.

p) Employees and equipment shall be positioned so as to avoid injury and damage in the event control of a pole or poles is lost.

q) In permanent storage areas, poles shall be stored on elevated ways, using sleepers between each layer. Each layer shall be secured. Should there be only two layers of poles, the second layer may be nested on the first.

r) Employees shall not stand between the pole pile and the loading or transporting equipment after attaching the load line to the pole.

s) When it is necessary to move a pole by hand, it shall be controlled with a line and/or cant hooks (peavey) or both.

t) When poles are loaded on a flat bed, bolsters or sleepers shall be used beneath the bottom layer when a load line must be passed under the poles in order to remove them.

u) Bolster type loads shall be loaded in a pyramidal fashion, each succeeding layer containing one less pole or until a peak of one pole is reached. Each layer shall be securely nested on the one below. Both sides of the bottom layer shall be secured with cables, chains or other approved means, except the top pole, which shall be held in place by the overall tie cable.

723 Working on Energized Lines with Live-Line Tools

a) Planned work with live-line tools shall not be started during unfavorable weather.

b) If during live-line tool work, an interruption to service occurs, the dispatcher or other person having jurisdiction shall be notified immediately.

c) Only tools approved by the Department shall be used in live-line maintenance work.

d) A careful check shall be made to see that the condition of the structure and lines at the point of the work is such that the job may be performed safely. In addition, the adjacent spans and structures shall be carefully checked for defects in conductors, tie wires, insulators and other equipment.

e) Under no circumstances shall a line mechanic depend on another employee to hold a live conductor clear of line mechanic.

f) When moving heavy conductors, blocks shall be used on the live-line tool so that they may be moved slowly and carefully.

g) While live-line work is in progress, no other work of any nature shall be performed on the same pole or structure.

h) All live-line tools, when not in use, shall be kept in canvas bags or waterproof boxes provided for that purpose, and such containers stored in a dry and, if possible, a warm place.

i) Live-line tools shall never be laid directly on the ground or against sharp objects such as barb wire fences. Special tool holders or tarpaulins shall be used for this purpose.

j) All live-line tools shall be visually inspected before use each day. Tools to be used shall be wiped clean, and if any hazardous defects are indicated, such tools shall be removed from service.

k) When practical, the automatic reclosing feature of circuit interrupting devices shall be made inoperative before work begins.

l) Conductors and apparatus energized at 7500 volts and above, phase to phase, shall be handled only with live-line tools.

m) Except for purposes of instruction, only employees--specifically trained in their use may perform work with live-line tools.

n) Two employees are required when live-line work is performed.

o) Employees working with live-line tools must use adequate protective equipment to cover primary conductors, low voltage conductors, telephone circuits, grounded conductors and guy wires or other wires within the "contact area."

p) Holdout ropes or live-line tools used to spread, raise or support conductors must be securely fastened and are not to be handled except as is necessary to secure or release the ropes or tools.

q) Breakers or approved link sticks are to be used in conjunction with ropes in hot line work in the event the dielectric quality of the rope is suspected or if the employee in charge considers them necessary.

r) Except in emergencies, live-line tools may not be used in rain or heavy fog.

s) When using live-line tools, employees shall not place their hands closer than is absolutely necessary to energized conductors, equipment, or metal parts of the tool being used, and in no case closer than specified in the following table:

Voltage (Phase to Phase)	Minimum Clearance
Above 2 to 15 kV	24"
15 to 35 kV	28"
35 to 46 kV	30"
46 to 72 kV	36"

724 Use of Live-Line Tools

a) Unprotected energized conductors shall not be brought into contact with steel or wood poles, masts, towers, cross-arms, or hardware or apparatus associated therewith.

b) Quick change tool heads shall not be used without a "quick change safety clip."

c) Approved blocks, ropes, slings and other tackle used in live-line tool work shall not be used for any other purpose and shall be kept clean, dry and free from any foreign substances.

d) Common ground wires and neutrals carried horizontally on the side of the pole below live-line conductors shall be removed from the pole or covered with rubber protective equipment before work on energized conductors or apparatus is begun. However, neutral circuits shall never be opened. Exposed vertical ground wires on poles shall be covered with molding within the working area before a job is started and extreme care shall be exercised to prevent gaffing of such ground wire molding.

e) Hold out ropes or live-line tools being used to spread or raise conductors shall be securely fastened and shall not be held by employees except as necessary to secure or release them.

f) Live-line tools shall not be hung on a conductor or bond wire. A hand line or approved tool hanger shall be used for this purpose.

725 Use, Maintenance and Care of Live-Line Tools

The employee in charge of the crew assigned to a job requiring the use of live-line equipment shall determine whether the work can be done safely. If, in the supervisor's opinion, a hazardous condition may be involved, the supervisor shall seek the advice of his immediate supervisor as to how the work shall be performed.

When working on energized conductors or apparatus with live-line tools, two qualified and authorized employees shall be on the pole, tower, structure, or suitable aerial lift to do the work. This does not preclude having one employee on the pole, tower or structure and the other employee in an aerial lift, in the same work area. When live-line tool work is being done on energized conductors or apparatus supported by non-climbable metal poles, the work shall be done from an aerial lift.

726 Working on De-energized Lines and Equipment

a) General. All conductors and equipment shall be treated as energized until tested or otherwise determined to be de-energized or until grounded.

b) New construction. New lines or equipment may be considered de-energized and worked as such where:

1. The lines or equipment are grounded, or

2. The hazard of induced voltages is not present and adequate clearances or other means are implemented to prevent contact with energized lines or equipment and the new lines or equipment.

c) Communication conductors. Bare wire communication conductors on power poles or structures shall be treated as energized lines unless protected by insulating materials.

727 Series Street Lighting Circuits

a) Before a series street lighting circuit is opened and work is performed thereon, one of the following procedures shall be performed.

1. Circuit shall be disconnected from the source of supply by opening disconnecting switches or other absolute cutouts, and Hold Cards shall be attached to such disconnects or cutouts. Dependence shall not be placed on time switches or other automatic devices.

2. Circuit shall be properly jumpered to avoid an open-circuit condition.

b) All series street lighting circuits shall be considered as energized and worked on in accordance with Rule Nos. 701, 702 and 703.

728 Working on Transformers

a) The primary leads of a distribution transformer shall be considered energized at full voltage until both the primary and the secondary leads have been disconnected, or it has been definitely determined that the secondary circuit to which it is attached is not energized from another source.

b) The cases of all transformers connected to a source of supply shall be considered as being energized at the full primary voltage unless they are adequately grounded.

c) Employees shall not stand on, or otherwise contact transformer cases, while working on or near energized circuits.

d) No work is to be done on a de-energized transformer normally energized above 600 volts phase to phase until:

Cutouts, fuse holders or switches, where provided, have been opened and the taps to the line have been removed using approved devices. If removal of the taps to the line is not practicable, the lead between the open cutouts, fuse holders or switches and the transformer must be removed, using appropriate safety devices approved for the voltage.

e) Where transformers are not protected by cutouts, fuse holders or switches, the tap to the line must be removed, using approved devices.

f) Before work is done on transformers connected in parallel or there is a possibility of back feed:

c) Communication conductors. Bare wire communication conductors on power poles or structures shall be treated as energized lines unless protected by insulating materials.

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a) The primary leads of a distribution transformer shall be considered energized at full voltage until both the primary and the secondary leads have been disconnected, or it has been definitely determined that the secondary circuit to which it is attached is not energized from another source.

b) The cases of all transformers connected to a source of supply shall be considered as being energized at the full primary voltage unless they are adequately grounded.

c) Employees shall not stand on, or otherwise contact transformer cases, while working on or near energized circuits.

d) No work is to be done on a de-energized transformer normally energized above 600 volts phase to phase until:

Cutouts, fuse holders or switches, where provided, have been opened and the taps to the line have been removed using approved devices. If removal of the taps to the line is not practicable, the lead between the open cutouts, fuse holders or switches and the transformer must be grounded or removed, using appropriate safety devices approved for the voltage.

e) Where transformers are not protected by cutouts, fuse holders or switches, the tap to the line must be removed, using approved devices.

f) Before work is done on transformers connected in parallel or there is a possibility of back feed:

1. Disconnect secondary leads.

2. Disconnect high voltage following (d) (1) or (e) above.

729 Hoisting Cables - Conductive Material

a) Wire rope or other conductive material shall not be used to raise transformers, poles, or any other material near high-voltage lines, except:

1. When the wire rope is rigged below all energized wires a sufficient distance to prevent the possibility of electrical contact between such wires and the wire rope or conductive material being raised; or

2. When the wire rope and any conductive material being raised are adequately protected by insulating covering placed on such energized wires.

b) Use of wire rope as a hoist line shall be discontinued when it becomes worn, deteriorated or damaged to a degree that is unsafe.

c) Metallic slings (chain or cable) shall not be used near energized equipment. Unless approved protective devices are installed to prevent accidental contact.

d) Whenever possible, chain slings shall not be used for hoisting purposes.

e) Positive control of wire rope shall be maintained at all times.

f) Synthetic hoisting and pulling lines and ropes shall not be considered as non-conductive, unless properly maintained to preserve their insulating qualities.

730 Working on Capacitors

a) Line capacitors shall be considered at full voltage and shall not be worked on until they have been removed from the line and the terminal short-circuited and discharged to ground by an approved method. The terminals shall not be short-circuited until the capacitors have been de-energized for at least five minutes and voltage reduced to 50 volts or less.

b) Employees shall wear approved rubber gloves while shorting and grounding terminals.

c) Employees shall not come in contact with an ungrounded capacitor case until the capacitor has been disconnected from the circuit and the terminals shorted.

d) Live-line tools must be used on voltages above 7500 volts phase to phase.

e) The terminals of used capacitors in storage shall be shorted.

f) Before any work is done on switched or fixed capacitor installations, the oil circuit breakers and/or fuse cutouts shall be opened, using load break devices where applicable. Where a circuit breaker is provided, it shall be opened first. After five minutes, the capacitor terminals shall be shorted by means of approved temporary jumpers. The shorted terminals shall also be securely bonded to the capacitor cases. Whenever practical, the short circuit and bond shall be left on until all work is completed. The primary taps from the cutouts to the line or the taps from the cutout to the switch or fixed capacitor shall be removed.

g) Before climbing into or through the area of a capacitor installation, automatically switched capacitors shall be de-energized and the controls made inoperative. On non-automatically switched capacitor installations, intentional contact shall not be made with pole top apparatus or other metal hardware in the area of an energized capacitor installation.

731 Energized Low Voltage Conductors or Apparatus

No employee shall touch any exposed conductor or apparatus energized at more than 300 volts, phase to phase, unless they are insulated from other conducting surfaces or uses adequate protective devices. When such conductors are located with non-climbable metal poles aerial work shall be done from an aerial lift. Where clearance specified in Rule 701 (h) cannot be maintained, all energized primary conductors shall be adequately covered up or barricaded with suitable protective devices.

732 Grounding

a) General. All conductors shall be considered energized until tested and properly grounded.

b) New construction. New lines or equipment may be considered de-energized and worked as such where:

1. The lines or equipment are grounded, or

2. The hazard of induced voltage is not present and adequate clearances or other means are implemented to prevent contact with energized lines or equipment and the new lines or equipment.

c) Communication conductors. Bare wire communication conductors on power poles or structures shall be treated as energized lines unless protected by insulating material.

d) Voltage testing. De-energized conductors and equipment which are to be grounded shall first be tested for the presence of voltage.

e) The terminals of used capacitors in storage shall be shorted.

f) Before any work is done on switched or fixed capacitor installations, the oil circuit breakers and/or fuse cutouts shall be opened, using load break devices where applicable. Where a circuit breaker is provided, it shall be opened first. After five minutes, the capacitor terminals shall be shorted by means of approved temporary jumpers. The shorted terminals shall also be securely bonded to the capacitor cases. Whenever practical, the short circuit and bond shall be left on until all work is completed. If the primary taps from the cutouts or circuit breakers to the line conductors are not removed, portable grounds shall be placed on the leads from the cutouts or circuit breakers to the capacitor terminals.

g) Before climbing into or through the area of a capacitor installation, automatically switched capacitors shall be de-energized and the controls made inoperative. On non-automatically switched capacitor installations, intentional contact shall not be made with pole top apparatus or other metal hardware in the area of an energized capacitor installation.

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No employee shall touch any exposed conductor or apparatus energized at more than 300 volts, phase to phase, unless they are insulated from other conducting surfaces or uses adequate protective devices. When such conductors are located with non-climbable metal poles aerial work shall be done from an aerial lift. Where clearance specified in Rule 701 (h) cannot be maintained, all energized primary conductors shall be adequately covered up or barricaded with suitable protective devices.

732 Grounding

a) General. All previously energized conductors shall be considered energized until tested and properly grounded.

b) New construction. New lines or equipment may be considered de-energized and worked as such where:

1. The lines or equipment are grounded, or

2. The hazard of induced voltage is not present and adequate clearances or other means are implemented to prevent contact with energized lines or equipment and the new lines or equipment.

c) Communication conductors. Bare wire communication conductors on power poles or structures shall be treated as energized lines unless protected by insulating material.

d) Voltage testing. De-energized conductors and equipment which are to be grounded shall first be tested for the presence of voltage.

e) Attaching Grounds

1. When attaching grounds, the ground end shall be attached first and the other end shall be attached and removed by means of insulated tools.

2. When removing grounds, the grounding device shall first be removed from the line or equipment using insulating tools.

f) Grounds shall be placed between work location and all sources of energy and as close as practicable to the work location, or grounds shall be placed at the work location. If work is to be performed at more than one location in a line section, the line section must be grounded and short circuited at one location in the line section and the conductor to be worked on shall be grounded at each work location. The minimum distance shown in Rule 701 h) shall be maintained from ungrounded conductors at the work location. Where the making of a ground is impracticable, or the conditions resulting therefrom would be more hazardous than working on the lines or equipment without grounding, the grounds may be omitted and the line or equipment worked as energized.

g) Testing without grounds. Grounds may be temporarily removed only when necessary for test purposes and extreme caution shall be exercised during the test procedures.

h) Grounding electrode. When grounding electrodes are utilized, such electrodes shall have a resistance to ground low enough to remove the danger of harm to personnel or permit prompt operation of protective devices.

i) Ground lead. A ground lead, to be attached to either a tower ground or driven ground, shall be capable of conducting the anticipated fault current and have a minimum conductance of No. 2 AWG copper.

j) Only approved grounding devices appropriate for the voltage involved shall be used.

k) The employee installing the grounding device shall determine that all other employees are a safe distance from any portion of the grounding device before contacting the conductor or apparatus with the grounding device.

l) Grounding devices shall be placed so that at least one of them is readily visible to at least one member of the crew.

m) Where it is necessary to place grounding devices at the pole or structure on which work is to be done, adequate means shall be taken to prevent employees from making accidental contact with grounding devices and energized conductors or apparatus.

n) Energized high voltage lines which cross over or under a de-energized line shall be considered possible sources of energy. When the work on such de-energized line involves only the wiping or testing of insulators, high voltage lines crossing under such de-energized lines need not be considered a possible source of energy.

733 Grounded Overhead Lines

a) Any exposed de-energized part of a line operated at a voltage in excess of 600 volts, phase to phase, shall not be worked on until the normally energized parts have been proven to be de-energized and all conductors of the circuit have been short circuited and grounded against all possible sources of energy. Energized high voltage lines which cross over or under a de-energized line shall be considered possible sources of energy. When the work on such de-energized line involves only the wiping or testing of insulators, high voltage lines crossing under such de-energized lines need not be considered a possible source of energy.

b) When working on conductors of a de-energized high voltage line (in excess of 600 volts), there shall be a minimum of one set of grounds between the place where the work is being done and the one possible source of energy. If conditions expose that section of the de-energized line to be worked upon to more than one possible source of energy, there shall be a minimum of two sets of grounds, one on each side of where the work is being performed.

c) Nothing in this rule shall prohibit working on energized conductors or apparatus by means of approved devices.

734 Working Distance

a) The following table lists the minimum working distances from energized conductors or apparatus, which are not properly covered with approved protective equipment:

0 to 300 Volts No Specified Distance
(See Rule 731, for Working Practice)

Voltage (Phase to Phase)	Distance
Above 300 to 2000 volts	12"
Above 2 to 15 kV	24"
Above 15 to 35 kV	28"
Above 35 to 46 kV	30"
Above 46 to 72 kV	36"

b) Nothing in this rule shall prohibit working on conductors or apparatus energized from 300 to 7500 volts, nominal phase to phase, with approved protective equipment.

c) Nothing in this rule shall prohibit climbing past bond wires.

d) The above safe working distances do not apply to energized conductors or apparatus protected by a suitable barrier or properly covered with approved protective devices. However, intentional contact shall not be made with the protective coverings, except for installation or removal.

735 Pole Mounted Apparatus

a) All cutouts and disconnects shall be operated with a fuse or switch stick, or approved telescoping live-line tool.

b) Contact with transformer, capacitor, regulator or oil switch cases, bond wires, hardware supporting primary voltage insulation and other apparatus shall be avoided except when tested and grounded or worked upon with approved devices.

736 Bonds

In addition to Bond Wires, the term bond, as used in this rule, refers to metal crossarms, metal insulator pins, space bolts, or any other hardware which is attached to insulators supporting energized conductors.

a) Line mechanic shall wear rubber gloves while working on ungrounded bonds of energized circuits.

b) Every insulator on the circuit shall be checked visually for breaks and cracks, on the pole being worked on, before contact is made with, or work is done on, the bond.

c) The following procedures shall be followed if the visual inspection indicates faulty insulators:

1. If any insulator is suspected to be faulty on circuits supported on single unit insulators, the conductor must be cleared before any work is done on the bond.

2. When circuits are supported on multiple unit insulators, at least 70% of the insulators in each string must be above suspicion or the conductor must be cleared before any work is done on the bond.

d) When conditions make it impracticable to follow the above procedure, the bond shall be worked with the Live-Line Tools or the circuit de-energized before handling the bond.

e) No work is to be done on the bond of circuits energized above 7.5 kV where the conductors are supported on pin type insulators except with Live Line Tools.

f) If there is exposure to contact with a metallic bond by any part of the employees's body, the bond shall be securely grounded.

737 Derrick Trucks, Cranes, Etc.

With exception of equipment certified for work on the proper voltage, mechanical equipment shall not be operated closer to any energized line or equipment than the clearances set forth in Rule 701 (h) unless:

735 Pole Mounted Apparatus

a) All cutouts and disconnects shall be operated with a fuse or switch stick, or approved telescoping live-line tool.

b) Contact with transformer, capacitor, regulator or oil switch cases, bond wires, hardware supporting primary voltage insulation and other apparatus shall be avoided except when tested and grounded or worked upon with approved devices.

736 Bonds

In addition to Bond Wires, the term bond, as used in this rule, refers to metal crossarms, metal insulator pins, space bolts, or any other hardware which is attached to insulators supporting energized conductors.

a) Line mechanic shall wear rubber gloves while working on ungrounded bonds of energized circuits.

b) Every insulator on the circuit shall be checked visually for breaks and cracks, on the pole being worked on, before contact is made with, or work is done on, the bond.

c) The following procedures shall be followed if the visual inspection indicates faulty insulators:

1. If any insulator is suspected to be faulty on circuits supported on single unit insulators, the conductor must be cleared before any work is done on the bond.

2. When circuits are supported on multiple unit insulators, at least 70% of the insulators in each string must be above suspicion or the conductor must be cleared before any work is done on the bond.

d) When conditions make it impracticable to follow the above procedure, the bond shall be worked with the Live-Line Tools or the circuit de-energized before handling the bond.

e) No work is to be done on the bond of circuits energized above 7.5 kV, except with Live Line Tools.

f) If there is exposure to contact with a metallic bond by any part of the employees's body, the bond shall be securely grounded.

737 Derrick Trucks, Cranes, Etc.

With exception of equipment certified for work on the proper voltage, mechanical equipment shall not be operated closer to any energized line or equipment than the clearances set forth in Rule 701 (h) unless:

a) An insulated barrier is installed between the energized part and the mechanical equipment, or

b) The mechanical equipment is grounded, or

c) The mechanical equipment is insulated, or

d) The mechanical equipment is considered as energized.

738 Pole Top Rescue

The following procedures can only be considered basic guidelines to follow in the event pole top rescue would be necessary. Rescue operations will naturally vary depending upon the prevailing situation.

PRE-RESCUE PROCEDURES:

a) Radio for necessary help through Dispatch Center, Office Personnel, Property Guard or to your Supervisor. State the situation and what is required, electrical circuit opened, paramedics, crew assistance, etc.

b) Size up the situation. The rescue efforts will be far more effective if a few seconds are devoted to full identification of the situation.

c) Prepare the equipment that will be needed to perform the rescue.

1. Rescue strap
2. Handline (be aware the handline already on the pole could be damaged from an electrical flash)
3. Protective rubber gear
4. Other tools that may be necessary for the circumstances.

RESCUE:

a) Protect yourself. Apply necessary protective equipment, use personal protective devices, then clear the victim from the possible hazards.

b) Position yourself to remove the victim from the pole.

1. Place the handline in a position that will be to the best advantage for lowering the victim through or past obstacles.

2. Have the ground person working the handline, split it and send up an end with a bowline knot tied in it.

3. On the pole, run the end of the handline over a crossarm (for friction) and to the victim's body belt (if a crossarm is not available, use what pole top hardware there is or just the handline shive and create friction for the mechanical advantage at the ground level), place the rescue strap through the bowline and snap it into the "D" rings of the victim's bodybelt.

4. Have a strain taken on the handline.

5. Attempt to slide the bodybelt up to or above the victim's waist.

6. Remove the victim's safety strap from around the pole, position it around the victim's leg and snap into the opposite "D" ring (if necessary cut the safety to free it up.)

7. Lower the victim to the ground -- it may be necessary to follow or lead the victim down to be helped past obstacles.

8. When the victim is on the ground, administer first aid.

801 Opening and Guarding Holes

Whenever cover is to be removed from a manhole or a vault or any other obstruction to traffic exists, the following precautions shall be taken:

a) All obstructions to traffic shall be guarded by adequate signs, barricades, lights, flares, flag, etc. Traffic shall be warned in sufficient time that an obstruction exists, through the use of signs, high level standards, flashing lights, traffic cones, flaggers, etc., as may be needed.

b) Where permissible and practicable, the truck shall also be placed to guard the work against oncoming traffic.

c) Whenever an employee enters a vault or manhole by vertical means, there shall be an employee in attendance at the surface. A protective device placed over the opening does not change this requirement.

d) An open manhole or vault shall never be left unguarded/ unattended.

802 Qualified Employees

Definition: See 701 (a).

Only qualified employees, or employees under continuous supervision or instruction of a qualified employee, shall be assigned to work on underground conductors or apparatus energized in excess of 600 volts, phase to phase.

803 Working Distance

a) The following table lists the minimum working distances from energized conductors or apparatus, which are not properly covered with approved protective equipment:

Voltage (Phase to Phase)	Distance
0 to 300 Volts	No Specified
Above 300 to 2000 volts	12"
Above 2 to 15 kV	24"
Above 15 to 35 kV	28"
Above 35 to 46 kV	30"
Above 46 to 72 kV	36"

b) Nothing in this rule shall prohibit working on conductors or apparatus energized from 300 to 5000 volts, nominal phase to phase, while using approved protective equipment.

804 Suitable Clothing

a) A City-provided flame-retardant shirt with full length sleeves rolled down shall be worn at all times.

b) A hard hat shall be worn by all employees when exposed to energized conductors or apparatus, falling objects or as required by the supervisor in charge.

c) Watch chains, wrist bands, exposed neck chains, key chains, tie chains and clasps made of metal shall not be worn when working on or adjacent to exposed energized conductors or apparatus.

d) Qualified employees working in energized manholes shall wear coveralls with integral lifting harnesses or other approved lifting harness with a suitable lifting line and device available, attended by a standby employee at the surface.

805 Protective Equipment

a) Approved protective rubber gloves with protectors and a lifting harness (with suitable line and lifting device immediately available, and attended by a standby employee) shall be worn by all personnel in manholes, vaults and confined transformer rooms when:

1. Engaged in inspections involving the exposure of energized primary equipment, such as 4-kV to 7.5 kV junctions and switches, etc.

2. Engaged in operating energized primary equipment. Max. voltage 7500 volts.

b) When operating padmount or subsurface apparatus with the use of approved live-line tools, it is recommended that all safety equipment be worn when operating equipment which is suspected of being faulty.

c) Employees working on any energized conductors or apparatus, or performing switching operations, such as making or breaking power connections, shall wear approved eye protection as follows:

1. During daylight hours, where visibility is not hampered, spectacle-type safety glasses or plastic coverall goggles with shaded lenses.

2. During darkness or other times when visibility is hampered, spectacle-type safety glasses or plastic coverall goggles with clear lens.

3. When employees are grounding any equipment or cable while wearing spectacle-type safety glasses they shall wear a full face shield.

806 Manhole Covers

a) Manhole, vault and service-box covers shall always be removed and replaced by means of approved hooks.

b) All vaults, manholes or other subsurface covers which are not hinged or provided with special lifting devices shall be raised slightly on one edge and slid off the hole using approved lifting devices.

c) Non-round covers must be handled by two employees in a manner which will minimize the possibility of the cover dropping into the hole.

d) Covers with hold-down bolts or devices shall be removed only with approved tools. Such bolts or device shall always be reinstalled when the cover is replaced.

807 Use of Wire Rope

a) Wire rope shall not be used to pull cable in duct already occupied by conductors.

b) When pulling cable, rigging shall be in a position to keep wire rope as far from energized cable and equipment as possible.

808 Entering a Manhole or Vault

A ladder shall always be used in entering or leaving a manhole or vault. Climbing into or out of manhole or vaults by stepping on cables, hangers, etc. is forbidden.

809 Raising and Lowering Underground Equipment

a) Synthetic rope shall be used to raise or lower under-ground equipment.

b) The standard crane signals contained in the State Safety Orders shall be used to direct the Equipment Operator.

810 Warning Employees

Before lowering material or tools into a manhole, the employee so doing shall warn all employees in the manhole or vault.

811 Fire Equipment

Each vehicle engaged in field work shall be equipped with an approved fire extinguisher, which shall be kept in good operating condition and immediately accessible at all times. The extinguisher shall be checked and initialed at least monthly.

812 Live Front Padmounted Apparatus

a) All primary cables must be de-energized and tested dead before moving primary cable or replacing dead-break fuses in pad-mounted transformer cabinets. Suitable live-line tools shall be used to perform these operations.

b) Safe working distance as specified in Rule 803 shall be maintained from any exposed energized parts when operating padmounted disconnects, fuse devices and resetting fault indicators with the proper live-line tools.

c) Work shall not be performed in the primary compartment or section of any pad-mounted transformer, switch or fuse enclosure in which there are exposed primary parts energized in excess of 600 volts, phase to phase, unless all such exposed energized parts are effectively barricaded or isolated from the work area. All exposed de-energized parts in the compartment must be tested dead and grounded before any work is performed.

813 Emergency Operation

a) During any period in which any apparatus must be left open and energized, a qualified employee must be stationed at the location to insure safety of the public.

b) All temporary cable installations must be made in such a manner as to insure maximum safety to employees and the public. The supervisor in charge may also require that a qualified employee be stationed at a temporary primary cable installation.

814 Operating Energized Internal Transformer Primary Loadbreak Switches

Internal transformer primary load break switches shall be operated with an approved live-line tool. Safe working distance as specified in Rule 803 shall be maintained from any exposed energized parts, unless insulating barriers are installed.

815 Entering Underground Structures

Follow Confined Space Entry Procedure, Rule #201.

816 Work on Energized Cables

Before any work is done on a cable, it shall be identified by an approved method. If there is any doubt as to the identification, work shall not be started until it is checked and identified by the proper authority.

a) All underground cables and apparatus carrying current at voltages above 600 volts shall be de-energized before work is done on the conductor, or before the cables are cut into or spliced.

b) Before any work is done on an energized cable, other cables and all grounded equipment with which contact can be made while working on energized cable shall be covered with rubber blankets or approved insulating shields. (Cables with non-metallic sheaths and those with an insulating jacket over the metallic sheath need not be covered.)

c) Because of the characteristics of a low voltage network system, when work is performed on cables or apparatus carrying less than 600 volts, employees shall take extra precautions in the use of necessary rubber protective equipment, in observing adequate clearances and in using proper tools in order to prevent short circuits.

817 Work on De-energized Cables

a) When cables and apparatus are taken out of service to be worked on, the procedures outlined in Section 6 shall be followed.

b) Before making an opening in or removing a part of the sheath or sleeve of a cable, the line shall be grounded at the first possible grounding point on each side of the work location.

c) When a high voltage cable is to be cut, a short section of shielding, and semi-conductor shall be removed and tests made with approved voltage detector device, to determine whether or not the cable is de-energized. If no indication of a live cable is obtained, the employee may proceed with the work.

d) When de-energizing cables or equipment normally operated in excess of 600 volts the following steps must be taken:

816 Work on Energized Cables

Before any work is done on a cable, it shall be identified by an approved method. If there is any doubt as to the identification, work shall not be started until it is checked and identified by the proper authority.

a) All underground cables and apparatus carrying current at voltages above 600 volts shall be de-energized before work is done on the conductor, or before the cables are cut into or spliced.

b) Before any work is done on an energized cable, other cables and all grounded equipment with which contact can be made while working on energized cable shall be covered with rubber blankets or approved insulating shields. (Cables with non-metallic sheaths and those with an insulating jacket over the metallic sheath need not be covered.)

c) Because of the characteristics of a low voltage network system, when work is performed on cables or apparatus carrying less than 600 volts, employees shall take extra precautions in the use of necessary rubber protective equipment, in observing adequate clearances and in using proper tools in order to prevent short circuits.

d) Employees shall wear rubber gloves with leather protectors and stand on rubber blankets while cutting into and removing, shielding and semi-conductor, while testing to see if a cable is energized or not.

817 Work on De-energized Cables

a) When cables and apparatus are taken out of service to be worked on, the procedures outlined in Section 6 shall be followed.

b) Before making an opening in or removing a part of the sheath or sleeve of a cable, the line shall be grounded at the first possible grounding point on each side of the work location.

c) When a high voltage cable is to be cut, a short section of shielding, and semi-conductor shall be removed and tests made with approved voltage detector device, to determine whether or not the cable is de-energized. If no indication of a live cable is obtained, the employee may proceed with the work.

d) When de-energizing cables or equipment normally operated in excess of 600 volts the following steps must be taken:

1. The cable or equipment to be de-energized must be positively identified and isolated from all potential sources of voltage.

2. Authorization must be obtained through the appropriate authority on all switches and disconnect devices through which voltage may be supplied to the particular cable or equipment to be worked on.

3. All switches and disconnect devices opened for de-energizing purposes must be tagged and, where design permits, rendered inoperable.

4. After all designated switches and disconnect devices have been opened, tagged, and rendered inoperable (where design permits), test must be made for indication of voltage on the "de-energized" cable or equipment.

5. After the cable or equipment to be worked on has been determined by test to be de-energized, it must be grounded unless all points of disconnection can be visibly verified to be open prior to performing the work.

6. Whenever the possibility of induced voltage is present on cables or equipment to be worked on, they must be short circuited and grounded.

7. Whenever work is performed on de-energized cables or equipment, all exposed energized parts of cable or equipment in the contact area must be covered with suitable protective equipment.

8. De-energized cable or equipment may be restored to service only after the employee in charge has determined that all personnel are clear, personal grounds have been removed and the appropriate authority has been notified.

e) Cables normally energized at more than 600 volts, phase to phase, or any cable whose voltage or identity is questionable, shall be proven de-energized in one of the following manners:

1. Cable terminals or apparatus which are equipped with capacitive test points or have bare exposed parts shall be proven de-energized with an approved test device.

2. If a cable cannot be positively proven de-energized using approved sensing tools, it will be spiked with a approved spiking tool or cut with approved remote cable cutters.

3. Other cables in the immediate vicinity of the one to be spiked or cut shall be protected as necessary.

4. Spiking a cable is a destructive test and will be done as a last resort with an approved live line tool.

5. After a cable(s) has been spiked or cut, the cable will be properly repaired.

f) Clearances, if required, shall be obtained in accordance with established procedures. After de-energizing, and before proceeding with the work on all power supply cables normally energized in excess of 600 volts, all conductors shall be short-circuited and grounded at both ends wherever possible, either in the manhole, vaults, substations, or where the underground cable connects with overhead wires, provided such grounds do not increase the working hazard.

g) All switches through which it is possible to energize the power supply cable to be worked upon shall be opened and tagged.

818 New and Existing Installations

Completion

a) New construction shall be monitored for soundness of workmanship and electrical operability by the supervisor or qualified personnel in charge to ensure throughout the entire job that City of Burbank standards are met.

b) The superintendent or supervisor in charge will determine whether to call upon the Test Shop to carry out testing on cable or equipment.

c) The installation is not completed until all components (cables, terminals, switches, switching trans etc.) are identified, tagged and the tagging is marked on the work drawing and one-line diagram.

d) Separable devices are always identified with a white ring around the neck of the elbow.

e) Loadbreak devices will only be operated energized when the system is designed and approved for operation as a loadbreak system.

819 Live Front Equipment

Fuses in live front equipment shall not be removed until de-energized and then only with live-line tools or after grounding by approved methods.

820 Static Charge on De-energized Cables and Grounding a Circuit

a) Before working on any section of cable or apparatus to which cable is connected, care must be exercised to insure that the cable has been grounded for a sufficient length of time to drain off any static charge.

b) If cable/equipment to be worked (in the opinion of the supervisor or qualified personnel) can't be safely isolated and grounded, using approved live line tools, all interfering energized cables will be de-energized to allow a safe isolation and grounding.

c) Only when a circuit/equipment has been proven de-energized, shall it be grounded.

d) When a three-phase load exists on a circuit all phases will be grounded even if only one phase requires work.

e) Grounding and tagging shall be done immediately after testing the circuit/equipment, de-energized.

f) Only approved tools shall be used or grounding.

g) Personnel involved with grounding shall wear City-approved, flame-retardant coveralls, hard hat with face shield and gloves.

h) When it is necessary to remove grounds from an underground circuit to test or use the conductors to identify the phases (e.g., telephones) such testing will be done with the clearance still outstanding and under an OK to remove grounds by supervisor when it will not infringe on any other clearance.

i) When one end of de-energized cable is grounded the other end of the cable may be worked by hand, provided all concentric neutrals are grounded.

821 Neutral Conductors

Neutral conductors shall not be opened without the prior installation of suitable bypass conductors. Great care must be taken by employee to avoid getting in series with vault ground and circuit neutral, especially in loop feeds where any part of the neutral could be carrying unbalanced current.

822 Pulling Cables

a) Employees shall not handle pull-wires or pulling-lines within reaching distance of blocks, sheaves, winch drums and take-up reels.

b) Employee shall not remain in a manhole or vault during pulling operations involving heavy pulling strains unless the employee can take a position clear of the pulling-line.

823 Moving Energized Cables

a) Cables operating at voltages above 15,000 volts shall not be moved under any circumstances.

b) All cables up to 15,000 volts may be moved at the discretion of the supervisor. They shall not, however, be moved where such movement requires changing bends.

c) All cables energized above 600 volts shall be handled with rubber gloves except when applying fire-proofing materials.

d) Any energized cable to be moved must be carefully examined before and after the move for any defects which might affect the movement or be caused by it.

824 Heating Materials

a) Metals and insulating compounds shall be heated in such a manner as to prevent hazard to the employees working in manholes or vaults and to vehicular or pedestrian traffic.

b) Gloves and goggles or face shield shall be worn while heating or working with hot insulating compound.

c) Furnaces and tanks containing liquefied petroleum gas such as butane or propane shall not be placed in a manhole or vault.

d) Cold solder scraps or dipper shall never be placed in a hot solder pot until the chill and any moisture have been removed from the scraps or dipper.

e) Heating pots for solder, oil or compound shall be safely positioned so that the contents cannot enter the vault or manhole in the event of spillage.

f) Lighted furnaces or blow torches should not be left unattended.

g) Torches or furnaces must be kept at a safe distance from flammable materials.

h) Portable hand-held propane torches may be taken into and used in vaults or manholes only for the period of time they are actually needed.

825 Installing and Removing Underground Cable

a) When installing or removing underground cable in proximity to exposed conductors energized above 300 volts, adequate precautions shall be taken to prevent accidental contact between the cable or metallic pulling devices and exposed energized conductors. In addition, workers handling cable, reels and tending reel dolly shall be adequately protected.

b) When pulling underground cable at riser poles in proximity to exposed energized conductors in excess of 300 volts, an approved cable method shall be used.

826 Operating Oil Type Underground Switches

a) Each step of routine or emergency switching shall be verified by two qualified employee at the work location.

b) Locate, identify, and mark the position to be switched.

c) Check all the existing positions of the switch and compare to the circuit map to insure that the switching order will accomplish the desired results.

d) If switching on an "RAC" type switch, a blocking device or special handle must be used to insure that the switch is operated only to the desired position.

e) All switching shall be done above the manhole or vault.

827 Operating Open Air Padmount Switches

Approved rubber gloves with protectors shall be worn when operating or entering air padmount switches. Before switching, refer to Rule 826 a, b and c.

828 Live-Line Tools

a) Live-line tools shall be used to install or remove plug-in terminations unless the termination and components are proved de-energized and grounded at a point between the termination and any source of supply.

b) Live-line tools shall be used when installing or removing taps between the concentric neutral conductor and any grounding point if the neutral is in service. For the purpose of this rule, the neutral will be considered in service at all times after its initial installation.

c) Current limiting fuses contained in transformers and switches shall be installed or removed with live-line tools unless all possible sources of feed (primary and secondary) are proven de-energized.

d) Live-line tools shall be used to operate switches that do not have handles specifically designed for their operation.

829 Raising and Lowering Materials into Manhole or Vault

Employees shall use equipment provided for lowering material and small tools into manholes and vaults. Approved pot hooks shall be used when lowering solder pots and compound kettle. Solder ladles shall be lowered separately.

830 Underground Residential Distribution (URD) - Introduction

Distribution systems have a number of apparent advantages over overhead systems; however, they also have some disadvantages, such as confined working spaces, closer clearances between energized parts and greater exposure to all types of grounds. In most cases, if protective devices are not used, the employee will be in direct contact with the ground or grounded equipment. This contact completes half of an electrical circuit; therefore, if these contacts are not avoided or protection against contact is not used, serious injury could result.

831 General - URD

Before a URD transformer enclosure is opened, all unauthorized persons including private citizens shall be required to leave the work area and remain clear of all hazards involved in the work.

832 Opening and Closing Circuits - URD

a) Department switching procedures, including Hold Carding and tagging practices, shall be followed when sectionalizing URD systems.

b) When URD Circuit has opened, the route of the circuit shall be patrolled for obvious hazards before the circuit is reclosed.

c) An approved switching tool and rubber gloves shall both be used when switches (including secondary breakers) in an energized circuit are opened or closed.

d) Any URD primary circuit shall be de-energized by opening one or more load break devices. De-energizing shall be done with a load break elbow connector, load break fuse cutout at the riser pole, load break tool or other approved load break device.

e) Eye or face protection shall be worn when primary switching operations are performed.

833 Grounding

Note: A capacitance charge can remain in a URD cable after it has been disconnected from the circuit and a static-type arc can occur when grounds are applied to such cables.

a) All URD cables and equipment, including services, that have been energized or could become energized from any source, shall be considered as energized until the equipment is positively proven to be de-energized and has been grounded.

b) Before doing work on de-energized primary circuits or equipment:

1. A visible open break shall be provided;

2. A voltage test shall be made; and

3. The equipment shall be grounded.

c) When work is to be done on equipment or cable of an underground system, precautions to prevent backfeed shall be taken. This shall include grounding of the secondary conductors where applicable.

d) De-energized cables to be worked on shall be grounded at a point as close to the work as possible.

e) All underground cables and apparatus carrying current at voltages above 600 volts shall be de-energized and grounded before cables are cut into or spliced.

f) Live-line tools shall be used to install or remove plug-in terminations unless the termination and components are proved de-energized and grounded at a point between the termination and any source of supply.

g) Live-line tools shall be used when installing or removing taps between the concentric neutral conductor and any grounding point if the neutral is in service. For the purpose of this rule, the neutral will be considered in service at all times after its initial installation.

h) Current limiting fuses contained in transformers and switches shall be installed or removed with live-line tools unless all possible sources of feed (primary and secondary) are proven de-energized.

834 Rubber Glove Use - URD

a) Rubber gloves shall be put on before entering any URD compartment or enclosure. Rubber sleeves shall also be worn when required for protection from contact with grounded equipment such as submersible transformer cases and padmount enclosures.

b) Rubber gloves shall be worn when removing animals, vines, weeds, grass or vegetation of any kind that has grown into an energized URD installation whether the equipment is opened or closed.

c) Rubber gloves shall be worn when energized primary cables are moved, handled or protected.

d) Rubber gloves shall be worn when working on or contacting a neutral.

e) Rubber gloves shall be used only up to 7500 volts. Live line tools shall be used above 7500 volts.

835 Work on Energized Equipment - URD

a) When work is performed on cables or apparatus carrying less than 600 volts, employees shall take extra precautions in the use of necessary rubber protective equipment, in observing adequate clearances, and in using proper tools in order to prevent short circuits.

b) When energized padmounted transformers are unlocked and opened, they shall be directly attended by a employee. They shall be kept closed and locked at all other times.

c) A primary or secondary system neutral on any energized circuit shall not be opened under any circumstances.

e) All underground cables and apparatus carrying current at voltages above 600 volts shall be de-energized and grounded before cables are cut into or spliced.

f) Live-line tools shall be used to install or remove plug-in terminations unless the termination and components are proved de-energized and grounded at a point between the termination and any source of supply.

g) Live-line tools shall be used when installing or removing taps between the concentric neutral conductor and any grounding point if the neutral is in service. For the purpose of this rule, the neutral will be considered in service at all times after its initial installation.

h) Current limiting fuses contained in transformers and switches shall be installed or removed with live-line tools unless all possible sources of feed (primary and secondary) are proven de-energized.

834 Rubber Glove Use - URD

a) Rubber gloves shall be put on before entering any URD compartment or enclosure.

b) Rubber gloves shall be worn when removing animals, vines, weeds, grass or vegetation of any kind that has grown into an energized URD installation whether the equipment is opened or closed.

c) Rubber gloves shall be worn when energized primary cables are moved, handled or protected.

d) Rubber gloves shall be worn when working on or contacting a neutral.

e) Rubber gloves shall be used only up to 7500 volts. Live line tools shall be used above 7500 volts.

835 Work on Energized Equipment - URD

a) When work is performed on cables or apparatus carrying less than 600 volts, employees shall take extra precautions in the use of necessary rubber protective equipment, in observing adequate clearances, and in using proper tools in order to prevent short circuits.

b) When energized padmounted transformers are unlocked and opened, they shall be directly attended by a employee. They shall be kept closed and locked at all other times.

c) A primary or secondary system neutral on any energized circuit shall not be opened under any circumstances.

d) Elbow connectors provide a great deal of flexibility in switching and system sectionalizing. However, only those connectors designed and approved for load break use shall be used to connect or disconnect an energized circuit.

e) Only tools with insulated handles shall be used for making energized secondary connections, or when work is performed within energized service pedestals, padmount compartments or submersible transformer enclosures.

f) Only one energized secondary or service conductor shall be worked on at any one time and protective devices shall be used to insulate or isolate it from all others.

g) Before any attempt is made to replace a damaged or blown fuses/circuit breakers, the customer's service will be checked for faults by the use of either an ohmmeter or a voltmeter.

h) A City-approved, flame-retardant shirt with full-length sleeves, rolled down, shall be worn when work is performed on any energized URD cable or apparatus.

836 Excavations - URD

a) Mechanical excavating equipment shall be used only in areas where there is no known danger of contacting or damaging buried facilities.

b) Before excavating in any area where any buried facilities are suspected, such facilities shall be located as accurately as possible.

c) Whenever excavating is done in close proximity to buried facilities, it shall be done only by hand digging.

d) If electric cables are damaged, the following steps shall be taken:

1. If the damaged cable belongs to another power company, this company shall be notified at once.

2. The area shall be barricaded and the public kept out until hazardous conditions can be eliminated.

e) If gas lines are damaged, the following steps shall be taken as soon as possible:

1. The hold shall be left open to allow the gas to dissipate into the atmosphere. All possible sources of igniting the gas shall be removed or eliminated.

2. Residents of the area shall be warned when necessary and the public kept out of the area.

3. The fire department shall be notified immediately.

4. The gas company shall be notified at once.

5. The police department shall be notified.

f) If communication company shall be notified at once.

g) When trenches are left open, warning devices, barriers, barricades or guardrails shall be placed to adequately protect the public and employees.

h) At the end of each day's work, as much of the trench as practical shall be closed. No more trench shall be open at one time than is necessary.

i) Suitable gloves shall be worn when using any equipment or tools to excavate, expose or handle secondary cables. They shall also be used when digging with approved hand tools to expose primary cables.

j) In excavations which employees may be required to enter, excavated or other material shall be effectively stored and retained at least 2 feet or more from the edge of the excavation.

k) When employees are required to be in trenches 4 feet deep or more, an adequate means of exit, such as a ladder or steps, shall be provided and located so as to require no more than 25 feet of lateral travel.

l) Sides of trenches 5 feet or more in depth shall be shored, sloped or otherwise supported by means of sufficient strength to protect employees working within them.

m) Refer to "Trenching - Excavating" Rule from the General Section also, Rule #138.

4. The gas company shall be notified at once.

5. The police department shall be notified.

f) When trenches are left open, warning devices, barriers, barricades or guardrails shall be placed to adequately protect the public and employees.

g) At the end of each day's work, as much of the trench as practical shall be closed. No more trenches shall be open at one time than is necessary.

h) Suitable gloves shall be worn when using any equipment or tools to excavate, expose or handle secondary cables. They shall also be used when digging with approved hand tools to expose primary cables.

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k) Sides of trenches 5 feet or more in depth shall be shored, sloped or otherwise supported by means of sufficient strength to protect employees working within them.

l) Refer to "Trenching - Excavating" Rule from the General Section also, Rule #138.

901 Primary Operations and Duties

a) Familiarity with Operations and Procedures - Supervisors shall be responsible for employees being thoroughly familiar with the equipment within the employees' jurisdiction. It shall also be the duty of each employee to be thoroughly familiar with the equipment he operates and adhere to Plant Operating Procedures.

b) Equipment in Services - All equipment shall be considered in service unless properly cleared and tagged.

c) Clearance Procedures - Written clearance procedures shall be followed before working on or entering any equipment. No employee shall work on any equipment that has been cleared for work unless he holds a clearance, or is working under another employee who holds such clearance.

d) Designation of Equipment - Equipment to be operated or worked upon shall be properly designated by name and number.

e) Responsibility - Operations and duties shall be performed only by authorized employees who shall be held responsible for their actions.

f) Abnormal Operating Conditions - Employees shall maintain a constant check on operating conditions to prevent potential hazard to personnel and equipment.

902 General

a) Visitors or uninstructed employees shall be accompanied by a qualified employee in stations and around department properties where life, service or property might be endangered.

b) All employees entering an attended station, except employees regularly working at such station, shall immediately report their presence or purpose according to procedure to the engineer in charge.

c) All control, annunciator and indicating light circuits on the back of control gauge boards shall be considered as energized. Employees working in back of these boards shall use precaution to guard against contact with exposed energized parts. Caution shall be exercised when disconnecting, blowing down or draining gauge lines to prevent contact with exposed electrical equipment.

d) When prolonged welding or burning is to be done in the boiler drum, auxiliary ventilation shall be used.

e) On all water tube boilers where drums are equipped with manheads at each end, both manheads shall be removed from each drum before workers enter the boiler. For inspection purposes only, only one manhead need be removed if a worker is stationed outside during period or inspection.

f) Steam lines shall not be worked on while under pressure except for repacking valves or peening pin hole leaks.

g) Before employees enter the furnace, gas passes or water side of the boiler, the following precautions shall be taken:

1. Read and understand the power production operating order for boiler entry procedures and confined space entry procedures, Rule #201.

2. All fuel shut-off valves shall be closed and safety tagged.

3. Soot-blower valves shall be closed and safety tags placed on each valve.

4. Safety tags shall be placed on the controls of the mechanical firing equipment such as fuel oil pumps, gas lines, pulverizers, dampers, etc. See Rule 114 and department clearance procedures.

5. Thoroughly ventilate all areas in which work is to be performed. (It would be advisable to provide continuous forced ventilation during the progress of the work where appropriate).

h) When working inside the furnace or ash hopper, protection shall be provided against falling slag. Boilers should be satisfactorily cleaned when out of service for furnace work.

i) Smoking or open flame is prohibited adjacent to oil tanks, gas lines, cooling towers, oil rooms, or other places where the hazard of fire or explosion exists.

j) When working on open types of floor grating and catwalks with tools, equipment, or material which might fall through, the grating shall be covered.

k) Before changing oil burners, the supply and return valves shall be closed and the burners purged.

Note: The release of high temperature, high pressure oil presents hazards to equipment and employees.

l) When preparing to light off a boiler that has been cold, it shall be ascertained that no one is inside the boiler or firebox.

m) When lighting a burner with a torch the operator shall stand to one side of the opening in the burner front to avoid being burned by unexpected flashbacks.

n) Whenever a boiler is in operation, employees shall avoid being near safety relief stacks to prevent injury from escaping steam or injury from escaping steam or injury to ears due to the high noise level should the safety relief valve operate.

o) When opening or closing valves on lines containing high temperature steam or water, the valves shall be operated slowly to reduce the danger of rupture to the lines and attendant hazards.

p) Steam lines or other pipe lines shall never be used for supporting chain hoists or other hoisting equipment.

q) Access to emergency showers shall not be blocked.

r) When floor plates or gratings are removed, the opening shall be barricaded.

s) While working inside condensers, at least two condenser doors in each pass shall be left open to provide necessary means of escape.

t) Tanks or other confined spaces shall be tested for hazardous gases and oxygen deficiency with approved instruments prior to entry and during work operations to insure a safe atmosphere.

u) Safety goggles or face shields shall be worn when inspecting or testing gauge glasses unless an adequate gauge glass guard is in place.

903 Boilers - Operating

a) Loss of Ignition - Loss of ignition shall be considered an emergency. The fuel supply to the affected boiler shall be cut off immediately. Relighting must be preceded by purging, in accordance with Plant Operating Procedures.

d) Fuel Gas Lines - In case of a break or bad leak in gas line or fitting, shut off that portion of the line completely, even if necessary to shut down the boiler.

e) Venting Gas Lines - Never under any circumstances vent unburned gas from any part of the piping into a boiler setting. If necessary to vent gas line, it must be vented to outside atmosphere in such a manner that the raw gas will be dissipated without danger of explosion.

904 Starting and Shutting Down Equipment

a) Before starting any equipment, a check shall be made of all related equipment and controls to be sure they are operable and in proper adjustment.

b) Established procedures for starting up and shutting down shall be rigidly followed, except that during abnormal conditions or emergencies, necessary deviations may be made with special permission of the superintendent or authorized representative. Any such deviation shall be properly logged.

905 Boilers - Out of Service

a) Internal Inspections - Employees shall not enter boiler firesides until fuel and steam lines, boiler fans and pulverizers have been cleared in accordance with Plant Operating Procedures. Boiler drums and headers shall not be opened until water level is below the opening, the pressure has been reduced to atmospheric, and feedwater, blowdown and drain lines secured. They shall not be entered until chemical feed lines are also secured and the drums properly drained.

b) Boiler drums shall not be opened until water level is below the opening, the pressure reduced to atmospheric and the drum temperature down to 140o F, and feedwater, blowdown and drain lines secured.

c) Drums shall not be entered until all valves (steam, feedwater, blowoff, etc.) governing the boiler are closed and properly tagged or locked.

d) When provided, the drain or vent between two closed valves shall be open.

e) Before any person enters the drums or setting of a boiler, care shall be taken to provide adequate ventilation and to be sure there is no flammable gas present.

906 Entering Confined Spaces

For the purpose of this section, the following areas shall be considered but not limited to potential confined spaces in the Power Plant.

The term "potential confined space" designates a place such as a condenser, generator, tank, tunnel or any other space which is entered through a manhole opening or other restricted opening or which may become difficult to leave.

a) Before employees enter a confined space, they shall notify their supervisor and shall see that all valves, switches, control devices and other operating mechanisms have been so positioned, secured and tagged with safety tags as to prevent closing the exit opening, energized electrically; evacuating the air or flooding the space with steam, gas, water or anything else that may endanger their life or health.

b) No employee shall enter a confined space unless a competent person, instructed as to the hazards of the job, is available to render assistance.

c) To prevent the latching of self-locking doors or hatches while employees are working inside confined spaces, the locking devices shall be made inoperative or the doors (hatches) shall be secured in the open position.

d) No employee shall undertake work inside a furnace, boiler drum, pressure vessel or tank except under the supervision of the Power Production Superintendent or authorized representative.

e) Before anyone enters a boiler drum, all valves, including blowdown valves, feedwater valves, steam valves and fuel valves shall be closed tightly and approved safety tags displayed as follows: One on each of the blow-down valves and one at each of the water-inlet valves. These cards shall not be removed until all work on the boiler has been completed, all employees are out of the boiler and all hand hole, manhole and heater plates have been replaced. See Rule 114 and Department clearance procedure.

f) Only approved low voltage (6 to 12 volt) extension cords shall be used in boiler drums, pressure vessels and tanks. These cords shall be of sufficient length that the the transformer and primary plug are outside the wet area at all times.

g) Before dismantling valves, flanges and similar apparatus associated with boilers, pressure vessels or pressure piping, the pressure shall be relieved and the equipment adequately drained.

h) Employees shall not smoke or use open flame in boiler while protective coating, containing flammable solvent is being applied. Only explosion proof lamps shall be used.

i) The employee holding the last clearance shall make a thorough inspection to see that all personnel are out of the confined spaces before the extension light cords or other warning devices are removed and the hatches, doors, etc. are closed. The last clearance can then be released.

j) On vessels other than transformers that have facilities for blanketing with nitrogen, a test for oxygen with an approved oxygen deficiency indicator, or a flame safety lamp, is to be made prior to entering. While in the vessel, the lamp if used is to be kept burning at all times in a location where it can be seen by the occupant.

k) Deficient Ventilation - Before anyone is permitted to enter areas where ventilation may be deficient, combustible or toxic gas may be present or where there is a possible depletion of oxygen, tests shall be made for such conditions in accordance with Plant Operating Procedures, when temporary ventilation measures are used, periodic tests shall be made to assure that a safe atmosphere is maintained. Combustible gases shall be vented to the atmosphere or into a safe ventilated area.

l) Use of Extension Light as Warning - When entering confined spaces, a suitable extension cord and light shall be taken in through the opening to serve as a warning to anyone who might otherwise close a hatch, door or cover while someone is inside.

ALSO FOLLOW RULE #201 - CONFINED SPACES.

907 Water or Steam Spaces

a) Ventilation - Before water or steam spaces of equipment are entered, atmospheric pressure must be established and the spaces adequately drained and ventilated.

b) Portable Power Tools - Where portable electric power tools are utilized in water or steam spaces, only tools approved by the plant superintendent shall be used.

c) Cleaning Condenser Tubes with Plugs - Suitable eye protection shall be worn at all times while plugging, blowing or washing condenser tubes. No one shall work at the opposite end of the tubes being cleaned.

d) Safety Belts and Life Lines - Safety belts and life lines, properly secured, shall be used when entering condenser water boxes with open water conduit below access opening.

e) Lighting equipment of more than 12 volts shall not be used. Electric tools shall not be used for condenser or boiler work, except that properly grounded portable tools may be used if special permission has been obtained.

908 Boiler Plant

a) When the blow-down line of a boiler being worked on is connected to a common blow-down line with other boilers and it becomes necessary to open the blow-down valves of the boiler being worked on, a safety tag shall be attached to the blowdown valves from all boilers. These safety tags shall not be removed until the valves of the boiler being worked on have been reclosed. See Rule 114, Rule 919 and "Department Safe Clearance Procedures".

b) Employees shall not work on safety valves while boiler is under pressure except to make necessary adjustments, nor shall they work near unvented safety valves while the boiler is under pressure.

c) Leaky manheads, handhole plates and bolted flanges on steam lines shall not be worked on under pressure without getting specific approval from Power Production Superintendent or his authorized representative.

d) Before a boiler water column is repaired or adjusted, the upper and lower shut-off valves shall be closed and the drain opened to release the pressure. Before placing a boiler water column in service, all personnel shall place themselves so that if the gauge glass should rupture, the employee would not be in direct line of steam discharge.

e) While applying a hydrostatic test to a boiler only those inspecting for leaks shall be inside the boiler. If safety valve gags are used, care shall be taken to see that they are removed before the boiler is fired.

f) All employees shall stay clear of pressurized oil or air escaping from a ruptured line or fitting. No attempt shall be made by the employees to stop or slow such a leak by using their hands, feet or other parts of the body. The pump, compressor or engine shall be stopped as soon as the leak is detected.

g) Inlet and outlet circulating water valves shall be safety tagged before employees enter the water box. If these valves are electrically operated, their main breakers shall be opened and safety tagged. See Rule 114 and Department clearance procedure.

h) All boiler plant safety devices such as safety valves, relief valves, fuel tripping devices, auxiliary tripping relays, interlocks and alarms shall be tested as set forth by management.

i) When lancing boilers, employees shall wear a long sleeve shirt buttoned at the collar (or slagging jacket), gloves and a face shield.

j) The boiler operator shall be notified before any door on a boiler is opened, since the fire might flash out due to a plus pressure within.

k) Employees shall stand to one side when opening the door.

l) Only authorized personnel shall be permitted to open boiler doors. Doors shall be closed before leaving the area.

Note: When practicable, the unit shall be placed on a fixed load and the induced and force draft fans on hand control in order to lessen the danger of a plus pressure.

m) Employees shall stand to one side when using plugs or brushes with an air gun to clean tubes. This will guard against back pressure in a blocked tube that may drive the plug or brush back when the air gun is removed.

n) No one shall be at the opposite end of tubes being cleaned or plugged.

o) Before removing a valve bonnet, or stuffing box gland, breaking a flanged joint or other pressure connections, the pressure shall be relieved and the system tagged.

p) Bolts, nuts or other fasteners shall be loosened with special care until it is certain that pressure does not exist.

q) Employees shall use only hoses that are approved for the intended use.

r) Air and water hose shall not be used for steam. Steam hoses shall be insulated sufficiently to avoid burns from accidental contact.

s) When a work area is adjacent to, or partially or wholly surrounded by energized areas, the "safe" work area shall be clearly marked by the use of barricades, tape rope or other suitable means.

t) When areas are to be marked with barricades, tape or equivalent, as above, this shall be accomplished without violating the minimum working clearance for the voltage involved.

909 Turbine Generators

a) Pre-steaming Check - Prior to starting up, all equipment and controls involved in the operation of the unit shall be checked. All such equipment shall be operable and in proper adjustment for safe operation.

b) Hydrogen System - Excessive hydrogen make-up, or abnormal loss of pressure, shall be considered and emergency, and shall be immediately reported to the superintendent and corrected. Periodic checks for hydrogen leaks shall be made at the generator and the sealing oil system.

c) Lubricating Oil System - Continuous attention shall be given to locating and controlling lubricating oil leaks. Leaks near the turbine or steam lines shall be considered emergencies, and reported to the superintendent and corrected immediately.

d) Changing Brushes - Collector ring or exciter brushes shall not be changed with the equipment in service, except with special permission of the superintendent or his delegated representative and then only in accordance with Plant Operating Procedures.

e) When working on or above open grating, a suitable covering shall be used to cover the grating in order to prevent tools or parts from dropping to a lower level.

f) Work area protection shall be provided or the danger area shall be barricaded when gratings are removed.

910 Boilers - Starting Up

a) Pre-firing Check - A pre-firing check shall be made of all equipment and controls involved in the operation of the boiler. All such equipment shall be operable and in proper adjustment for safe operation. A careful inspection shall be made for oil soaked heat insulation on hot ducts or steam piping and such conditions shall be eliminated before lighting off. There shall be water showing in the gage glasses.

b) Continual monitoring of fires shall be maintained until stable fires are assured.

911 Gage Glasses

a) Employees shall not work on gage glasses until the pressure has been relieved, or work near gage glasses under pressure, unless the employees are protected from possible failure of the gage glass.

b) Gage glasses shall be pressurized carefully and only when employees are protected from possible failure of the gage glass.

912 Hydrostatic Testing

a) Pressure vessels shall be pressure tested with water only.

b) During hydrostatic testing of boilers, only persons authorized by the superintendent, or his delegated representative, shall be permitted to enter the boiler setting. If hot water is used, filling the boiler shall not start while employees are inside the furnace.

c) All waterside clearances shall be released before hydrostatic testing a boiler.

d) Permits shall be posted and renewed.

913 Lighting Off

a) Only a torch or igniter designed for the purpose shall be used for lighting fires in a boiler. The employees handling the torch shall keep clear of the opening into which the lighted torch is placed. Under no condition shall burners be lighted from hot brick work or adjacent fires. In case of loss of ignition in a boiler, fuel valves shall be closed and the boiler thoroughly purged before lighting fires again.

b) Employees handling hot burner guns shall wear clothing with full length sleeves rolled down and shall used approved eye protection and protective gloves, mittens, pads or other approved devices. Care shall be exercised to prevent drip from the guns injuring others.

914 Testing Safety Devices

Safety valves, automatically operated stop valves, reverse flow valves, protective interlocks, annunciators and other safety devices, shall be checked by authorized personnel in conformance with established schedules. A record of the test shall be made and kept on file.

915 Hydrogen Cooling Systems

a) Open flames shall be kept away from hydrogen cylinders and employees shall not smoke in the vicinity of cylinders or the manifolds to which they are connected. No smoking will be allowed in the immediate vicinity of the hydrogen seal oil unit.

b) A sufficient quantity of CO2 shall be readily available at all times to purge the hydrogen from the generator.

c) Any generator or other vessel containing air shall first be purged with CO2 before hydrogen gas is admitted.

d) Any generator or other vessel containing hydrogen shall be purged before entering; first with CO2 then with air. Test for adequate oxygen shall be made with approved apparatus before entering.

e) If hydrogen seal oil pressure is lost and cannot be immediately restored, the hydrogen shall be purged from the generator.

f) Only non-sparking tools shall be used in hydrogen areas.

g) When hydrogen filled equipment, such as generators and synchronous condensers, are out of service for overhaul, smoking or open flames shall not be permitted around the unit until all hydrogen has been purged from the equipment and unit is declared safe to enter.

h) Precautions shall be observed on all leaks and repairs made as soon as possible. Periodic checks shall be made of hydrogen usage for an indication of leakage.

i) When changing oil in bearings with hydrogen in the machine, the oil shall first be drained into open containers.

j) Hydrogen purity must be kept within safe limits.

916 Filling or Evacuating Hydrogen from Synchronous Condensers and Generators

a) Purging and filling a machine with hydrogen shall be done in accordance with detailed written instructions.

b) A qualified employee must be present at all times during the operation.

c) A suitable area adjacent to the machine shall be roped off and "No Smoking" signs posted. No smoking or open flames shall be permitted in this area.

d) Only employees actually required to perform filling or excavating operation shall be permitted inside of the roped off area.

e) All hydrogen cylinders shall be disconnected from the header or the spool shall be removed from the supply line, prior to purging the machine of hydrogen and shall remain disconnected until completion of the inspection or overhaul and the air has been purged from the machine with CO2.

917 Fuel Gas Lines and Regulators

a) All gas lines shall be properly identified. "No Smoking" signs shall be posted around control equipment and in areas subject to gas leakage. Large areas may require "No Smoking" signs where pressure controls use gas for operating power.

b) Gas lines shall be properly purged when practical and the line tested for combustible gases before work is started. Use inert gas for purging. Air shall not be used to purge gas lines. Barrier tape shall surround the area and "No Smoking" signs posted. The line shall be frequently tested as a check that no isolation valves are leaking through.

c) Welding or hazardous work on pressurized gas lines not purged shall be performed in accordance with approved detailed written procedure for the specific job and under the supervision of a qualified employees. Tools, buffers and saws that will not cause sparks shall be used around gas equipment.

d) Gas lines and headers not in use will be vented in such a manner that a combustible mixture will not accumulate or circulate so the mixture may become ignite and cause an explosion.

e) In the event of a gas fire, it is safer to allow the gas to burn until the source is cut off than to extinguish the flame.

Acid Cleaning - During acid cleaning, areas where acid is being mixed or vented shall be roped or posted and no smoking shall be permitted. No work shall be done inside of the boiler or windbox during acid cleaning. Work and welding is permissible in well-ventilated areas as determined safe by the superintendent. Suitable procedures shall be established to avoid explosions from evolved hydrogen, or injuries from the chemicals.

918 Chlorine System

Eye wash fountains and deluge showers will be installed in the vicinity. Periodic inspections shall be made to determine the condition of the masks, fountains and showers.

919 Station Clearance Procedure

a) The operator in charge will have the equipment cleared for work by ordering the necessary valves, doors, fuses, switches, etc., opened or closed, as the case may be, so that equipment is unwatered, disconnected, depressurized and drained, or otherwise made safe for employees to work.

b) Every source from which steam, water, gas, oil, air, electricity, etc., might enter the equipment shall be checked and every such hazard eliminated.

c) When all valves, doors, switches, fuses, etc., have been closed, opened, pulled or blocked, locks or "Men At Work" tags shall be properly placed by the operator to insure that isolation equipment will not be operated.

Clearances may then be issued when the equipment is drained and at zero pressure.

d) All valving, switching and other operations performed to clear the equipment shall be specifically stated when reporting to the operator in charge, by the person or persons to whom the instructions were given. Equipment used for isolation shall be logged by the operator, with names of persons performing the operations and the time the transaction was completed.

e) When issuing a clearance, the shift engineer in charge will insure all Power Plant clearances conform to existing clearance procedures and logs.

f) Clearances shall be given to Burbank Public Service Employees. When persons other than Public Service Department employees are working on steam plant equipment, an authorized Public Service Department employee shall hold the clearance.

g) Taking Clearances - Persons desiring clearance shall report to the Steam Engineer in charge, and after explaining what is to be done, request and receive the clearance in the prescribed and formal manner.

h) Multiple Clearances - Where more than one group is working on the same major piece of equipment, each supervisor or qualified person in charge of the group shall enter his name on the existing clearance. Only one clearance sheet will be utilized on an individual piece of equipment at any time.

i) Transferring Clearances - If employees holding a clearance on equipment desires to transfer their clearance to another qualified employee, they shall notify the engineer in charge. The second party shall then take a clearance on the equipment, after which the first party shall then release their clearance. The second party shall then be held responsible for the clearing of the equipment at the completion of the work.

j) Clearance Outstanding - All outstanding clearances shall remain in effect until properly released.

k) It is the responsibility of the clearance receiver to terminate such clearance as soon as it is no longer needed.

920 Releasing Clearances

a) Upon the completion of work, the person holding the clearance shall be responsible for the removal of all tools, etc., and make sure that all employees are clear before releasing their clearance.

b) When (a) has been done, they shall report to the engineer stating that they are clear of the equipment, and all of the employees are clear, and that the equipment "is" or "is not" OK for service.

c) Any special condition pertaining to the equipment released shall be reported and logged. Example: Bearings and couplings not lubricated. Inboard shaft packing not run in, etc.

d) All parties receiving clearances shall personally release their clearances. When necessary to release a clearance through a second party due to an unusual condition, the equipment shall be thoroughly inspected before it is put in service. The Steam Engineer shall direct the inspection in such cases and have all details logged.

921 Prior to Restoring Equipment to Service

Before restoring equipment to service the supervisor in charge or the operator shall insure the following has been performed:

a) He shall make certain that all clearances are released.

b) That all "Clearance" and "Men at Work" tags are removed from equipment used for isolation.

c) That a through inspection has been made.

d) That tests are made where necessary.

922 Acids and Caustics - Storage

a) Acids, in any quantity, shall be kept in an approved carboy or other approved container, prominently labeled. These containers shall not be used for any other purpose.

b) Acids shall not be stored near heaters, steam pipes or other sources of heat.

c) Acid containers shall be securely stoppered or covered.

d) Acids kept on shelves shall not be stored higher than waist level.

e) For acids or caustics spills, Refer to AP V-13.

f) Employees handling acids, caustics or other corrosive, toxic chemicals shall wear approved gloves, aprons, eye and face protection and shall take precautions to prevent personal injury.

g) The use of new materials shall be investigated thoroughly as to their toxic qualities and personnel shall be advised of any hazards involved.

h) Chemical pumps shall be washed externally before repacking or performing maintenance work.

i) Storage areas for acids and caustics shall be posted with appropriate warning signs.

j) Areas where acid cleaning is to be done shall be barricaded by suitable means and no smoking or open flames shall be permitted.

k) Suitable procedures shall be established to avoid explosions from released hydrogen or injuries from the chemicals.

l) Contact lenses shall not be worn when working in laboratory or when handling acids, caustics or other corrosive chemicals.

923 Acids and Caustics - Handling

a) Only reliable, dependable and properly trained employees or suppliers' personnel shall operate valves or other equipment that control the movement of chemicals.

b) Approved protective equipment and clothing shall be worn whenever acids or caustics in harmful quantities may spill, splash, fly or drip upon the person handling them. The quantity of acid or caustic handled shall determine the kind and quantity of clothing and equipment. Minimum protection shall be chemical goggles, acid-proof gloves and apron.

c) Should any acid, caustic or other chemical come in contact with the eyes, they shall be thoroughly washed with large amounts of running water and a physician consulted as soon as possible. Do Not Rub the Eyes.

d) Employees shall not handle acids or caustics unless there is access to an adequate supply of water for quick drenching and flushing of the eyes and body.

e) After handling large quantities of caustics, employees shall take a shower to avoid skin irritation.

f) Before lifting or moving a carboy or other acid container, it shall be examined carefully to see that it is not in a leaky or defective condition. The wire holding the carboy stopper in place shall be checked to see that it has not corroded and that the stopper is secure. All movements shall be made slowly to avoid excessive agitation of the acid.

g) Before starting to unload a tank car or tank truck of acid, the acid storage tank shall be gauged to see if there is adequate storage space within the tank to contain all of the acid being added.

h) When tank cars or trucks are unloaded, warning signs shall be prominently posted and barriers placed so as to warn of the danger.

i) Only approved methods, tools and equipment shall be used to extract acid from a container. Compressed air shall be used only when the container was designed to be used with the compressed air acid transfer method. Sucking by mouth on a syphon or pipette is expressly prohibited.

j) Acid in railroad tank cars or tank trucks shall be unloaded in accordance with the regulations of the Interstate Commerce Commission and the recommended practices of the Manufacturing Chemists' Association.

924 Acids and Caustics - General

a) When mixing acid or caustic with water, the acid or caustic shall be poured into the water, not the water into the acid or caustic.

b) If it is necessary to enter a tank or vat to clean it, persons entering shall wear approved hard hat or hood, rubber gloves, rubber or plastic outer clothing and boots, shoes or wooden clogs. They shall also wear air masks and a lifeline. At least one worker shall remain outside the tank or vat to operate the lifeline.

c) Boiler additive chemicals can be highly toxic and caustic and shall never be handled without adequate ventilation. Skin or clothing contact and the breathing of fumes shall be avoided.

d) All small containers such as bottles or jars shall be washed thoroughly when emptied. Carboys, steel drums, tank trunks or tank cars shall not be washed but shall be completely drained of all acid before returning to the acid supplier.

e) Open flames and smoking are prohibited when working with or near acid in metal containers, such as tanks, condensers or boilers. Spark proof tools shall always be used where there is a danger of accumulated hydrogen.

Note: Certain acids in contact with metal produce explosive hydrogen.

925 Handling and Use of Chlorine

General

a) When it is necessary to work on chlorine lines or equipment, all sources of chlorine shall be turned off at the chlorine cylinders and the lines safely discharged (to normal path of usage, not to atmosphere) before any connection or pipe is opened.

b) Only employees who have been trained in their use shall use gas masks (respirators).

c) A chlorine system enclosure or shelter shall have available two units of approved, self-contained breathing apparatus and protective clothing. They shall be located outside the shelter or enclosure at a sufficient distance to make them approachable in the event of a chlorine leak.

d) Portable gas cylinders in storage shall have roof or shield covers for protection against the weather.

e) Eye wash stations shall be provided close to the chlorine station (scale room).

f) Employees shall use appropriate body, eye, face, hand and foot protection.

g) Whenever chlorine cylinders are changed, there shall be at least two employees present.

h) One employee wearing approved respirator shall be changing the cylinder and the other employee, wearing self-contained breathing apparatus, shall be stationed outside the scale room as an observer and to render immediate first aid.

i) The observing employee shall carry a two-way radio for communication with the supervisor in charge, the Fire Dept., and other appropriate personnel.

j) Whenever chlorine cylinders are replaced with the new cylinders, the line shall be pressurized and piping shall be tested for leakage with ammonia. If the leak is observed, the cylinder shall be shut off and all fittings and piping shall be rechecked and repaired. Testing process shall be repeated after repair.

k) All doors of the scale room (chlorine stations) shall be kept open for ventilation.

Chlorine Handling Training

a) All personnel involved must have a clear understanding of the consequences of a chlorine leak and its effects on the body.

b) All personnel involved must be trained in the proper handling and use of chlorine and the use of required safety equipment.

c) All personnel must be made aware that chlorine tank changing and any chlorine tank or piping repair shall never be attempted alone.

a) In the event of a small leak from pipeline, an employee shall don self-contained breathing apparatus and proceed to close valve or system isolation. Other employees shall communicate with the supervisor in charge regarding the status. Further course of action shall be determined by the supervisor in charge.

b) In the event of a major leak, because of a rupture in the tank or any other reason, or any other chlorine emergency, the following procedure shall apply in this sequence:

1. Evacuate the area

2. Secure the area

3. Notify the supervisor in charge

4. Notify the Burbank Fire Dept. at Ext. 4911

5. Notify the current chlorine supplier

926 Control Boards

a) All control, annunciator and indicating light circuits in the back of the control and gage boards shall be considered energized.

b) Employees working in back of these boards shall use precautions to guard against contact with exposed, energized parts.

c) Caution shall be exercised when disconnecting, blowing down, or draining gage lines, to prevent contact with exposed electrical equipment.

927 Repairs on Equipment Under Pressure

a) The repairing of boilers, pipe lines, and attachments under pressure is not permitted except when officially authorized. Before such work is undertaken, the Engineer on duty shall be so advised, and shall make or direct any valve or equipment adjustments needed for the work.

b) Under no condition shall any Employee pound on headers, valves, piping or other apparatus carrying steam, hydraulic or air pressure.

928 Pressurizing Lines and Equipment

a) Lines, pressure vessels, pumps and other pressure equipment shall be vented or brought up to pressure in accordance with plant operating procedures.

b) Gas lines shall be purged and pressurized in accordance with written instructions for the job, in order to avoid combustible mixtures within the lines.

929 Breaking Pressure Connections

Before removing a valve bonnet, or stuffing box gland, breaking a flanged joint or other pressure connection, the bolts, nuts or other fasteners shall first be loosened and special care exercised to make sure that pressure does not exist.

930 Fire Hose

Employees shall not remove a fire hose from a fixed station longer than necessary to connect a replacement section or for the minimum time required for testing.

931 Rigging

Rigging equipment shall be carefully inspected before and after each use. Defective equipment shall be repaired or discarded immediately.

932 Chemical Laboratories

Employees assigned to work in the laboratories or with chemicals shall take reasonable precautions to protect themselves, and others from spilled chemicals, broken glassware and other injurious substances.

933 Unusual Hazards

a) No employee shall perform work or take any conducting object within the area where there exists a hazard of contact with energized conductors by reason of the work he is doing, unless directly under the observation of a qualified observer.

b) Jobs involving unusual hazards shall be performed in accordance with special instruction. The Chief Steam Plant Engineer or representative shall be directly responsible for the issuance of such instruction.

934 Boom Cranes

Boom cranes shall be grounded and an observer provided when working near energized high voltage lines or buses in stations. Transmission and distribution overhead line trucks are excluded from coverage herein.

935 Gantry Cranes

a) Both rail clamps and wheel brakes shall be applied at all times when outdoor cranes are not in use.

b) Limit switches on cranes shall be tested regularly but should not be relied upon to stop the motor. Action of the crane shall be controlled by the operator at all times.

c) Gantry cranes shall not be used to make a side pull.

d) Automatic signals shall be sounded before starting and repeated during travel of the crane.

936 Cranes, Hoists, Derricks, Booms and Winches

a) A warning bell shall be sounded when overhead traveling and gantry cranes are in motion or loads are being moved overhead.

b) Hoisting hooks shall be magnafluxed periodically.

c) Safety switches shall be opened before changing the power cable on a gantry crane.

d) Rigging equipment shall be carefully inspected before and after use. Defective equipment shall be repaired or discarded immediately.

Refer to Rule #311 also.

937 Elevators

a) Only authorized personnel shall operate elevators.

b) The safe loading capacity posted in the elevator shall be observed and followed.

c) No passengers or freight shall be carried while repairs, adjustments, or inspection are being made.

d) No one shall enter the elevator pit unless or until all concerned with the operation of the elevator are notified. A warning sign shall be placed at the elevator control.

e) Elevator controls shall be tested by the operator before making his or her first trip of the day.

f) In the event of a power failure, the controls shall be moved to the "off" position and kept there until normal operation can be resumed.

g) When an elevator is taken out of service for repairs or left unattended by the authorized operator, the doorway shall be blocked and an appropriate sign placed at or near the elevator control.

h) No elevator shall be operated unless all passengers are facing the door from which the elevator is being controlled.

SECTION 10 - ELECTRIC SUBSTATION

1001 Scope

These rules will apply to all personnel concerned with and engaged in work in electric substations.

1002 Definitions

Qualified Employee - Qualified employee for the purpose of this section is an employee of the City of Burbank, Public Service Department, electrical Equipment Section, who holds one of the following titles:

a) Electrical Superintendent
b) Electrical Equipment Supervisor
c) Electrical Supervisor
d) Electrical Test Coordinator
e) Senior Electrician
f) Senior Test Technician
g) Electrician
h) Test Technician
i) Electronic Technician

Only qualified employees shall be assigned to work on conductors or equipment energized in excess of 600 volts phase to phase. During the time a qualified employee is doing work on any energized high voltage conductor or equipment, another qualified employee must be in close proximity at each work location to act primarily as an observer for the purpose of preventing an accident. A qualified employee, while working as an observer, shall not participate directly in the work being done.

1003 Entering or Working Substations

a) All employees entering a substation must immediately report their presence and purpose to the appropriate switching center. Entry reporting by the employee in charge will constitute reporting for his entire crew.

b) No employee shall work on any station apparatus without first obtaining proper authorization from the appropriate switching center.

c) When any testing, switching or other work is to be done on high voltage control or protective apparatus in a substation, the appropriate switching center must be notified before the work is started and after the work is completed.

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a) Electrical Equipment Superintendent
b) Electrical Supervisor
c) Electrical Test Superintendent
d) Senior Electrician
e) Senior Test Technician
f) Electrician
g) Test Technician
h) Electronic Technician
i) Apprentice Electrician (7th Step may under the direction of two other qualified employees)

Only qualified employees shall be assigned to work on conductors or equipment energized in excess of 300 volts phase to phase. During the time a qualified employee is doing work on any energized high voltage conductor or equipment, in excess of 600 volts, another qualified employee must be in close proximity at each work location to act primarily as an observer for the purpose of preventing an accident. A qualified employee, while working as an observer, shall not participate directly in the work being done.

1003 Entering or Working in Substations

a) All employees entering a substation must immediately report their presence and purpose to the appropriate switching center. Entry reporting by the employee in charge will constitute reporting for his entire crew.

b) No employee shall work on any station apparatus without first obtaining proper authorization from the appropriate switching center.

c) When any testing, switching or other work is to be done on high voltage control or protective apparatus in a substation, the appropriate switching center must be notified before the work is started and after the work is completed.

d) Visitors or uninstructed employees may enter substations only when the appropriate switching center is notified of such visit, and must be accompanied by a qualified employee.

e) Station operations may be performed only by or under the direct supervision of a qualified employee and according to instructions issued by the appropriate switching center.

1004 Working on Energized Conductors or Equipment

a) No employee shall touch or work on any exposed energized conductor or electrical equipment at more than 300 volts, phase to phase, unless approved protective devices are used.

b) No employee shall touch or work on any exposed conductor or electrical equipment energized at voltages between 300 and 7500 volts, phase to ground, except when wearing approved rubber gloves or using approved live-line tools with rubber gloves.

c) Conductors or electrical equipment energized over 7500 volts and above, phase to phase, shall be handled only with approved live-line tools. Approved rubber gloves shall also be used along with live-line tools.

d) Rubber gloves shall be worn before entering the "contact area" and shall not be removed until the employee is out of the "contact area."

e) The term "contact area" is defined as any location in or from which any part of the employee's body, or the tool being used by the employee, is within reach of unprotected conductors or energized parts in excess of 300 volts phase to phase. The term "within reach" includes conductors and equipment which might be touched if any employee slips or falls. It also includes unprotected conductors or energized equipment which might be touched by any material the employee is carrying or handling.

f) Whenever circumstances require an employee to wear rubber gloves, the observer must also wear rubber gloves.

g) Except for that portion of the conductor or electrical equipment actually being worked on, all energized parts within reach of the workman must be covered with approved insulating devices or protected by suitable barriers.

h) Where required, suitable barriers or barricades, tags or signs must be in place for personnel protection.

i) All other personnel protective equipment and clothing as defined in Rule 1013 shall be used.

1005 Approach and Working Distances

a) The following table lists the minimum approach and working distances from unprotected energized conductors and electrical equipment for qualified employees as defined in Rule 1002.

Voltage Range (Phase to Phase) Kilovolt	Minimum Working and clear hot stick Distance
Above 2 to 15	2 ft. 0 in.
Above 15 to 35	2 ft. 4 in.
Above 35 to 46	2 ft. 6 in.
Above 46 to 72	3 ft. 0 in.
Above 72 to 121	3 ft. 4 in.

b) When working on energized conductors or electrical equipment, work is to be done from below when possible.

1006 Electrical Equipment

Employee shall not be permitted to work around energized electrical equipment unless they are properly protected. Dusters or wipers, except those with approved insulated handles for voltage being worked on, shall not be used on or about energized parts. Employee shall not go inside guard rails around moving or automatic machinery, or high potential electrical equipment when such machinery is or may start in motion or is energized.

Employee, while wearing rubber gloves, shall not hand anything to or take anything from another employee not so protected, except when doing so does not complete an electric circuit. Employees on operating duty shall not attempt to make repairs to equipment. Such persons may reset alarms only, and none involving the use of tools.

1007 Operating Switches

An employee is only qualified to operate a switch in an electrical system if the switch falls in the scope of their job duties.

a) All energized substation. O.C.B., V.C.B., A.C.B., G.C.B., disconnect switch, gang operated switch or load break switch will only be opened or closed under the direction of the operating authority (Section 602a). Exception: In cases of emergency operation see (Section 602c).

b) All de-energized substation, O.C.B., V.C.B., A.C.B., G.C.B., disconnect switch, gang operated or load break switch under a clearance issued by the operating authority may be operated by qualified employees as needed for maintenance. When maintenance is complete switch will be left in condition it was in when clearance was issued.

c) Electrical test switches will only be operated by qualified test personnel with permission of the operating authority (Section 602d).

d) Open air padmount switches will only be operated on the 200 amp side by qualified employees from the Electrical Equipment and Electrical Distribution sections. The 600 amp side will only be operated by qualified employees from the Electrical Distribution Section, under permission of the operating authority (Section 827).

e) Pole mounted air switches and oil switches will only be operated by qualified employees in the Electrical Distribution Section under permission of the operating authority.

f) Operating oil-type underground switches will be performed by qualified employees of the Electrical Distribution Section (Section 826).

g) Operating primary loadbreak switches on padmount transformers will be performed by qualified employees (Section 814).

h) D & W, I.F.D.L.R., and A.F.T.O.S. oil switches in customer substations will be operated by qualified employees from the Electrical Equipment Section.

i) Grounding disconnect switches will be opened or closed under the direction of the operating authority. They may be operated during maintenance under direction of individual holding clearance on position.

1008 Working on De-energized Conductors and Equipment

a) Clearances are required on conductors or electrical equipment normally operated at a voltage in excess of 600 volts. They shall be in accordance with Rule #606. The person directly in charge of the work shall be responsible for determining that the conductors or electrical equipment are disconnected from all sources of supply.

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b) After authorized persons have been notified that such conductors or equipment are cleared for work, or the proper clearance obtained, tests shall be made to determine that conductors or electrical equipment are de-energized before work is started.

c) Where the working hazard would be increased by the application of grounds, they need not be applied if the supervisor approves this action.

d) Working on de-energized conductors and electrical equipment:

1. All conductors and electrical equipment must be considered and worked as energized unless positively known to be de-energized by test.

2. When de-energizing conductors or electrical equipment normally operated in excess of 600 volts, the following steps must be taken:

(a) The conductor or electrical equipment to be de-energized must be positively identified and isolated from all potential sources of voltage.

(b) Authorization must be obtained through the appropriate switching center on all switches and disconnect devices through which voltage may be supplied to the particular conductor or electrical equipment to be worked on.

(c) All switches and disconnect devices opened for de-energizing purposes must be tagged, and where design permits, rendered inoperable.

e) After all designated switches and disconnect devices have been opened, tagged and rendered inoperable where design permits, tests must be made for indication of voltage on the "de-energized" conductors or electrical equipment.

f) After the conductors or electrical equipment to be worked on have been determined by test to be de-energized, they must be grounded unless:

1. The use of grounds would increase the working hazard.

g) Whenever work is performed on de-energized conductors or electrical equipment, all energized conductors or electrical equipment within reach of the workman must be covered with approved insulating devices or protected with suitable barriers.

h) De-energized conductors or electrical equipment may be restored to service only after the employee in charge has determined that all personnel are clear, personal grounds have been removed, and the appropriate switching center has approved the restoration. Refer to Rule #610 also.

1009 Grounding

a) De-energized conductors and electrical equipment must be tested for voltage before grounds are installed.

b) Grounds must be so placed that one of them is visible to at least one member of the crew.

c) Only approved grounding devices may be used. They must first be connected to a ground before attachment to the conductor or electrical equipment to be grounded. Reverse order must be followed for removal of grounding devices.

d) The employee installing the grounding device must determine that all other employees are a safe distance from any portion of the grounding device before contacting the conductor or electrical equipment being grounded.

e) Grounds when required, must be placed between work locations and all possible sources of supply.

f) Grounds are to be placed as close as practicable to the work location.

g) Insulating devices appropriate for the voltage involved (normal operating voltage of the conductor or electrical equipment) must be used to make or break ground connections directly to conductors or electrical equipment.

h) The minimum distances shown in Section 1005 must be maintained from unprotected, de-energized ungrounded conductors or electrical equipment at the work location, or such conductors or electrical equipment must be worked as energized.

i) Ground leads must be capable of conducting the anticipated fault current and must have minimum conductance equivalent to 4/0 AWG copper.

j) Only clamps designated for grounding may be used for that purpose.

k) Any exposed ungrounded part of a conductor or piece of electrical equipment normally operated at a voltage in excess of 600 volts, phase to phase, shall not be worked on until de-energized and not until the normally energized parts to be grounded have been tested for indication of voltage and all conductors have been grounded against all possible sources of supply. This shall not preclude the removal of grounds for test purposes. This rule shall not preclude working on energized conductors or equipment by means of approved devices.

1010 Portable and Personal Grounds and Jumpers

a) Approved personal grounds shall be made of 4/0 or larger extra-flexible copper wire and shall have a protective covering on the wire. The protective covering is NOT to be considered as insulation.

1. Jumpers shall be of proper length to suit the job at hand and shall have an approved clamp on each end.

2. Aluminum cable is not approved for portable or personal grounds.

3. All portable grounds shall be numbered and have a test date.

b) Approved portable grounds shall be 4/0 copper or larger with approved clamps and applied with hot sticks.

1011 Instructing Workman Relative to Condition of Line or Equipment

Any employee acting in a supervisory capacity, shall make sure any statements or orders made by him relative to the condition or clearance of lines or electrical equipment, are understood and acknowledge by every person concerned before work is started. If the condition or status of lines or equipment is changed, the supervisor shall see that all personnel on the job are notified and acknowledges the notice thereof.

1012 Planning Work With the Supervisor in Charge

Unusually hazardous jobs shall not be started without first consulting the supervisor in charge.

1013 Personal Protective Equipment

a) Approved safety glasses with face shield and approved rubber gloves with protectors, shall be worn by all personnel when:

1. Engaged in performing manual switching or grounding operations in confined spaces, or where close proximity to the equipment is required for such operation.

2. Engaged in installing or removing switches or grounding devices in metal clad switchgear, unless such equipment has been previously de-energized and externally grounded.

3. Using high voltage detectors or phasing devices in close proximity to energized equipment, including metal clad switchgear.

4. As deemed advisable by the employee directly in charge of the work.

b) A City-approved, flame-retardant (100% cotton or wool) shirt with full length sleeves rolled down must be worn when working on poles, structures, or near energized conductors or electrical equipment, and under such other conditions as the employee in charge may direct.

c) Metal watch chains, wrist bands, rings, key chains, tie chains, or clasps must not be worn when performing duties in contact area to exposed energized equipment.

d) Approved dielectric head protection must be worn by all electric field forces, when required, during working hours. Head protective devices must not be altered in any way that changes their dielectric quality.

e) Hard hat meeting ANSI Z89.1-1986, Class B requirements, safety glasses and safety shoes shall be worn in the following areas:

1. Power Plants. (Hard hats not required in control rooms or other designated areas.)
2. Switching Stations (hard hats not required in control rooms).
3. Customer Substations
4. Water Pumping Plants (hard hats not required in control rooms).
5. Any other work area where there is a hazard of flying or falling objects, and/or electric shock or burns. This is in addition to any posted sign requiring protective equipment to be worn or used while operating a particular piece of equipment.

1014 Qualified Observer Required

Each employee shall personally discuss with his observer and agree upon warning and approval signals and checking communications to be adopted for the individual job. Each employee shall receive an approval from his observer before he changes his location and again after changing his location before he contacts any conductor or electrical equipment that could be energized. Always stop at working position and receive approval from observer before making contact.

a) If the supervisor in charge, or his representative, shall determine a job to be hazardous because of proximity to energized equipment and shall decide that an observer is necessary to reduce such hazard and prevent accidents, he shall designate a qualified observer.

1. Observers shall be thoroughly instructed and familiarized with all specific hazards before they are allowed to assume the duty of observer.

2. Observers shall give the employees under their observation their undivided attention and allow no distraction to remove their attention from the employees.

3. Observers shall give warning when employees are approaching energized parts or other hazards and shall repeat this warning when employees are near energized parts as often as is necessary to keep the employees constantly aware of the hazard.

4. Where the nature and extent of the work at any one location is such that one observer cannot adequately watch the movements of all workers in hazardous areas, additional observers as necessary shall be used.

5. Employees shall first notify the observer before charging from one location to another, and shall designate the route to be taken to the new location.

1015 Electrical Barriers and Barricade Tape

a) When work is in progress in or adjacent to a structure which has energized parts, suitable temporary barriers must be used to prevent accidental contact and suitable barrier tape to define safe work area.

b) Employees may not cross over or under the tape while it is barricading an area, except in an emergency or when the work in progress requires an employee to enter the area. While within the barricaded area, the employee must be continuously watched by a qualified observer for the purpose of preventing an accident.

c) Where the barriers are to be placed is the responsibility of the individual holding the clearance on the equipment out for work, and they are to be moved only under his direction. When the work is finished, the person holding the clearance will have qualified employee remove the barriers prior to releasing the clearance.

1016 Clearance on Station Equipment

a) Whenever possible, before issuing a clearance on any electrical equipment, the dispatcher or other qualified persons shall make all controls non-operative, including all feedback circuits from potential transformers or other sources and determine that the equipment is cleared.

b) Before beginning work on any electrical equipment or structure at any existing station, the employee in charge of the work shall conduct a Tailboard conference. The conference shall include the status of the electrical equipment, what part is energized, location of grounds, what the limits of the working space are and what open switches disconnect the electrical equipment from the source of supply. If for any reason, there is an interruption in the work or conditions change, another conference shall be conducted in order that all of the employees will be familiar with the new conditions.

c) When men are working in a structure supporting energized equipment and it is necessary to do disconnect switching in the structure, the operator shall report this to the employee or employees holding clearances in the structure. Any employee working in the structure shall be called "down" out of the structure until the switching is completed. The status of conductors and equipment in the structure shall be rechecked before the employees are allowed to return to work in the structure.

d) The dispatcher shall not issue a clearance on any temporarily idle piece of moving equipment without first making inoperative all switches or starting devices which might accidentally cause it to start.

e) Before issuing a clearance on any electrical equipment which is remote controlled, the dispatcher shall de-energize or make non-operative the control unless otherwise requested. This does not apply to the circuit control switch located in the circuit breaker mechanism housing but does apply to any controls which are to be made non-operative by opening the knife switches, roto switches, or similar devices located within the control room. It also applies to secondary control circuits such as potential transformer secondaries, etc.

f) Before a clearance is issued on any electrical equipment normally energized in excess of 600 volts, there must be at least one open air break between such equipment and any source of energy.

g) Before beginning work on any electrical equipment at an existing station, the employee in charge of the work shall see that all the personnel in the crew are familiar with the status of the electrical equipment, what part, if any, is energized, what the limits of the working space are, and what switches disconnect the electrical equipment from the source of supply. If the status of the electrical equipment concerned is changed by switching, or for any reason there is an interruption in the work where the personnel leave the job, such as stopping for lunch, before work is resumed, the same formality of checking and making the employees familiar with conditions shall be followed as at the beginning of the job.

1017 Capacitors

After manually switched capacitor bank has been disconnected from an energized source it will not be re-connected to an energized source again for at least five minutes. This time delay will provide for discharging the capacitors through the internal shorting resistors and thereby prevent undesirable transient voltage conditions and high in-rush currents.

Automatically switched capacitor banks may be equipped for less time delay before re-energizing.

VAR management switched capacitor banks should be in the supervisory control of the SCADA Control Center before opening the control cabinet door or any other doors.

1018 Switchboards

The space in the rear of switchboards shall be kept clear of all foreign equipment or supplies. Sufficient illumination shall be provided for the front and rear of switchboards so that they can be readily operated and maintained.

1019 Tanks, Reservoirs

For entry procedures, follow confined Space Procedures, General Section, Rule #201.

1020 Unusual Electrical Hazards

a) No employee shall bring any part of his body closer to exposed energized parts or take any conductive object without an approved insulating handle, closer to exposed energized parts than shown on Rule #1005 "Approach and Working Distances."

b) No material or tools of any sort may be carried on the shoulder when working around energized equipment. Long material, including lumber, must be carried in a horizontal position. Extreme caution must be exercised to prevent any material or tools from accidentally contacting energized conductors or electrical equipment.

1021 Working on Energized Disconnect Switches

Work shall not be done on any open disconnect devices of 5 kV or over, while one side is energized except by the use of live-line tools or approved barriers with the specific permission of the supervisor in charge.

1022 Proper Designations Required

Disconnect switches, switchboard controls, relays, knife switches, and all equipment in stations which is required to be operated or worked upon, must be plainly designated by name, number or suitable means to properly identify such equipment.

1023 Fire Control

a) When working in any room, switch cell or other compartment where automatic CO_2 equipment is permanently piped for fire protection, the CO_2 equipment must be made non-automatic while men are working in the compartments.

b) After a CO_2 discharge in an enclosed room or compartment, no one shall enter the room or work area until it has been ventilated, the atmosphere tested with an approved oxygen deficiency tester and found to be safe for occupancy, unless the employee is wearing either an approved self-contained breathing apparatus or an approved air line respirator.

1024 Washing of Energized Station Insulators

a) When hot-washing station insulators:

1. Water shall be tested for resistivity by use of an approved water tester at each filling of the water container.

2. Water used shall have a minimum resistance as shown below:

VOLTAGE RANGE	MINIMUM RESISTANCE
0 - 50 kV	500
50 - 250 kV	800

NOTE: As water resistance decreases with increase in temperature, it shall be checked occasionally when tank is exposed to the sun.

3. A qualified observer shall be used when hot washing is in progress or the washing rig or boom is being moved in the station yard.

b) Minimum safe working distances from the nozzle to the energized part being washed are shown in the following table (1000 ohm water - 450-550 psi nozzle pressure):

Voltage (Phase to Phase)	Working Distance in Feet Nozzle 3/16"	Nozzle 1/4"	Nozzle 5/16"
4 to 12 kV	6	7	10
13 to 23 kV	8	10	13
24 to 70 kV	10	12	15
71 to 115 kV	15	15	18
230 kV	15	15	20
500 kV	20	20	20

1025 Current Transformer Secondaries

Before energizing any current transformer, it shall be known that the secondary circuit is closed. If the primary voltage exceeds 600 volts, the secondary shall also be grounded. Before working on instruments or other devices in a current transformer secondary circuit, the instruments or devices shall be short-circuited by jumpers or approved test switches so that the current transformer secondary circuit cannot be opened while working on the instruments or devices connected thereto. The ground lead or the secondary circuit of an energized current transformer shall never be disconnected or opened.

1026 Hold/Safety Tags/ Warning Tags

Follow Rule #114 form General Section.

1027 High Voltage Testing on De-energized Cables

a) High-Pot Testing

1. Clearance shall be obtained in accordance with Rule #603 and/or #605 & #606 whichever is applicable, before high pot test is started on cables.

2. Circuit shall be tested with circuit voltage indicator to assure that circuits are de-energized before the start of the test.

3. Circuit to be tested shall be tagged or barricaded and area where testing is to take place shall be taped off with yellow tape marked "CAUTION ENERGIZED." No one except test personnel shall be in taped-off area.

4. Circuit to be tested shall be checked at opposite end to make sure that it is clear and no personnel are working in the area. If circuit is terminated on riser pole, pole is to be barricaded with barricades marked "HIGH VOLTAGE TEST - DANGER HIGH VOLTAGE."

5. If testing is to be done in underground manholes, the area around test manhole shall be yellow taped and no one except test personnel shall be in test area. Check other end of circuit and make sure that it is clear.

b) Circuit Under Test - Phases other than phase being tested shall be grounded with a jumper. Phase under test with high voltage lead will hang free and clear of any metal and/or any other conductor.

c) Personnel Performing Tests

1. Personnel performing tests shall wear hard hats, safety glasses and high voltage test gloves, approved for the voltage being worked with.

2. Test Control Box shall be placed as far as possible from high voltage source.

3. When phase test is completed, instrument is turned off to allow voltage to decay to 2 kV or less before applying ground stick. When micrometer is at zero, apply ground jumper to tested phase. Leave ground jumper on all tested phases to eliminate personnel hazard. Wear rubber gloves when applying ground jumpers.

   Due to dielectric absorption during Hi Pot testing the cables must be short circuited and grounded for at least the same time as time taken for testing. Electricians or line personnel will remove ground jumpers when they are connecting cables.

d) High Voltage Testing in Test Shop Area

Transformer, Regulator and Capacitor under test shall be tested in gated area which has interlock switches. No person shall remain inside gated area except person operating Hi Pot test set.

1028 Identifications

All switchboards shall be provided with readily legible circuit name plates. All equipment in switch racks, yards, switchgear rooms, etc., shall be so marked as to be readily identified by persons working in such areas.

1029 Work on Energized Disconnect Switches

Work may not be done on any open disconnect devices of 300 volts or over while one side is energized except with the specific permission of the employee in charge.

1030 Locking Stations and Enclosures

All substation gates must be kept locked at all times, except when personnel or vehicles are actually entering or leaving.

1031 Test Schedule for Rubber Protective Equipment

a) Gloves - shall be tested every two weeks for line and underground section personnel. Testing of gloves shall be done ever six months for others (Elect. Equip., Dispatch Center, and Fire Dept. personnel.

b) Blankets, Hoses and Hoods

1. For Line and Underground Section, testing shall be done ever 12 months.

2. For Electrical Equipment, testing shall be done after each use or every year, maximum.

1101 Working Area

a) Workplaces, storerooms, personnel service rooms and passage ways shall be kept clean, orderly and in a sanitary condition.

b) Working areas and platforms shall be kept free of dangerous projections or obstructions, maintained in good repair and reasonably free of oil, grease or water.

c) Flexible cords and air hoses shall not pass through walkways, roofs, walls, windows or doors.

d) Three feet working clearance in front of electrical panes shall be maintained at all times.

e) ditches, pits, excavations and surfaces in poor repair shall be guarded by visible barricades or rails.

f) A minimum of 24-inch walkways shall be provided.

1102 Machine Guards

a) Protective guards shall not be removed during progress of work, and shall be kept in good repair. Lockout/ Blockout procedures from General Section Rule #114 shall be followed.

b) Projecting shaft ends should present a smooth edge and should not project more than one-half the diameter of the shaft, unless guarded by a non-rotating cup or safety sleeve.

c) All projecting keys, setscrews, and other unguarded projections of moving parts should be cut off and made flush or guarded by a metal cover.

d) Shaft couplings should not present a hazard from bolts, nuts, setscrews, or other projections on revolving surfaces. Shaft couplings should be hood guarded.

e) When oiling must be done frequently, openings with hinged or sliding, self-closing covers should be provided.

f) Where oiling must be done while a machine is in operation, extension fittings should be used to place the operator out of danger.

g) Guards shall be designed not to interfere with the usual machine operation, but to give maximum protection to the operator.

1103 Automatic Lifts

a) Automatic lifts shall be labeled with the following information:

1. Name of the manufacturer

2. Division approval number or statement of compliance with ANSI B 153-1-1974

3. Capacity

4. Date of installation

b) Hydraulic automotive lift shall be equipped with a readily accessible direct control device which will automatically return to the neutral or off position upon release by the operator.

c) Oil tank and oil storage tank on automotive lift installations shall be provided with a graduated stick gate to indicate the oil level in tank.

d) No slots in excess of 2-1/4" in width (unless closeable by hinged flat cover) shall be permitted under the lift.

1104 Saws

a) Keep the saw sharp and clean, and the teeth properly set.

b) To prevent sticking, keep the blade true with the cut; in wet or gummy wood, a little oil or paraffin may help.

c) Do not "ride" the saw; if it doesn't cut well, sharpening or setting may be needed.

d) If one knee is used to steady the work, watch the balance carefully.

e) Handle saw teeth carefully, for they can make a worse cut than a sharp knife.

1105 Electrically Operated Machinery

When repairing electrically operated machinery, other than those operated through an extension cord, the electrical switch shall be locked out or the fuses removed and "Employees at Work" signs posted. When extension cords are used, they shall be detached from the receptacle. On the completion of the work the circuit shall not be energized or the equipment operated until the person so doing is assured that everyone is in the clear.

1106 Pneumatic Tools

Refer to Rule #125

1107 Machinery - Metal Working

Point of Operation Guard

a) Machines having a grinding, shearing, punching, pressing, squeezing, drawing, cutting, rolling, mixing or any other similar action in which an employee comes within danger zone shall be guarded at the point of operation to protect the operator's hand from reaching into point of operation.

b) All machines, parts of machines, or component parts of machines which create hazardous revolving, recriprocating, running, shearing, punching, pressing, squeezing, drawing, cutting, rolling, mixing or similar action shall be guarded.

c) Non-repeating devices shall be maintained in good working condition.

d) A power press shall be locked out and the ram blocked while adjusting the die or work, or removing obstacles. Refer to Lockout/Blockout Procedures, Rule #114.

e) Approved devices shall be used to keep the hands and fingers out of the point of operation of a power press.

f) The workers shall immediately notify their foreman of any faulty operation of a power press.

g) A jig, clamp, or vise shall be used to hold the work piece of a drill press table when there is danger of the work being caught by the drill.

h) Metal chips shall not be removed from the machine beds or cutting areas with the hands.

i) Mechanical aids shall be used when handling heavy face plates, chucks or work parts.

j) The machine shall be stopped for oiling or adjustments. Extensions shall be used to oil or lubricate the machine while in motion.

k) The ram of a power hammer or press shall be lowered and secured at the end of the shift.

l) All foot-operated devices (i.e., pedals, treadles, bars, valves and switches) shall be guarded from unintended operation.

1108 Machinery - Wood Working

a) Material shall not be brushed away from the saw with the hands while a saw is in operation.

b) Freehand sawing on circular saws is prohibited.

c) A push stick shall be used while cutting narrow lengths or short pieces on a circular saw.

d) The motor shall be shut off when through with a machine.

e) The height of the circular saw blade shall be adjusted for the cut to be made and the blade shall just clear the material.

f) A hood shall be used on a circular ripsaw that will cover the saw to at least the depth of the teeth. The hood shall be designed to prevent a kickback or a separate anti-kickback device shall be used. Except when grooving, dadoing or rabbiting, a spreader shall be used.

g) Employees shall not reach over a circular saw while it is in motion unless the required guard is in place.

h) When a band saw blade breaks, the motor shall be shut off and the machine shall come to rest before the pieces of broken saw are removed.

i) No part of the blade of a swing cut off saw shall swing beyond the front edge of the table. Limit chains or other positive stops shall be provided for this purpose.

j) Swing cut off saw blade shall be enclosed on both sides in such a way that at least the upper half of the blade and the arber end will be completely covered.

k) There shall be an effective device to return the saw automatically to the back of the table when released at any point of its travel.

l) Shaper knives shall extend into the slot of the collar at least 2/3 of the length of the slot.

1109 Soldering Irons and Welding Operations

a) Keep hot soldering irons away from woodwork or other flammable material; set the tools on fireproof racks or holders when not in use.

b) From the habit of turning off electric soldering irons every time the work place is left.

c) Never test the temperature of a soldering iron by holding it close to the face, as just one slip could be permanently disfiguring.

d) Avoid snapping or throwing surplus solder from the iron or wiping it on a trouser leg; keep a prepared pad handy for this purpose.

Welding Operations

a) Personal protective equipment - Appropriate eye, face, foot, hand and body protection shall be used during the welding operations.

1. Use eye glasses and full face shield for eye and face protection.

2. Use steel-toed shoes for foot protection.

3. Use City-supplied flame-retardant shirt and/or leather jacket for body protection.

4. Appropriate screens shall be used for protection against radiant energy.

5. Wearing of contact lenses is prohibited in working environments having harmful exposure to materials or light flashes.

6. Use leather gloves with sleeve for hand protection.

b) Arc Welding and Cutting

1. Where the work permits, the welder shall be enclosed in an individual booth or shall be enclosed with non-combustible screens. Workers or other personnel adjacent to the welding areas shall be protected from the rays by non-combustible or flameproof screens or shields.

2. Welding machines shall be shut off when operations are suspended.

3. All electrodes shall be removed from the holders and the holders carefully located to prevent accidental contact.

4. Arc welding and cutting cable free from repair or splice for 10 feet from the electrode holder shall be used.

5. Arc welding and cutting frames shall be grounded.

6. Not electrode holder shall not be dipped in water.

7. Welding or cutting equipment having a functional defect shall not be used.

c) Inert Gas Metal Arc Welding

Employees shall not engage in and shall not be exposed to the inert gas metal arc welding process unless the following precautions are taken.

1. Chlorinated solvents shall not be used within 200 feet.

2. Employee in the area shall be protected from arc by screening.

3. All personal protective equipment shall be used by the welders.

4. Employees exposed to radiation shall have their skin covered completely to prevent ultraviolet burns.

5. Inert gas metal arc welding on stainless steel shall not be performed unless exposed employees are protected either by local exhaust ventilation or by wearing supplied air respirator.

d) Ventilation

1. "Roll away" type electronic air cleaner shall be used at each welding station for ventilation.

2. When the nature of the work is such that exhaust ventilation is not an effective means for preventing hazardous exposure levels, appropriate respirator shall be used.

1110 Grinding Wheels

Probably the most common power tool in industry is the abrasive grinding wheel. Because it is used indiscriminately by many persons, frequent injuries result from lack of training, ignorance of the hazards, and incorrect setup and operating. Choice of the right wheel and speed of rotation are important considerations in any grinding job. Consult the wheel manufacturer for detailed recommendations. These admonitions should be heeded:

a) Apply work gradually, giving the wheel an opportunity to warm up slowly.

b) Never operate a wheel that is loose on its spindle, out of balance, or nicked or cracked.

c) Never allow a grinding wheel to stand partly immersed in water, for the water-soaked portion may throw the wheel dangerously out of balance.

d) Keep the tool rest as close to the wheel (not more than 1/8" away) as possible without touching it; adjustment should be made when the wheel is not in motion.

e) The tool rest should be at or slightly above the center line of the wheel.

f) Where much pressure is required, grind the ends of heavy objects against only the face of the wheel.

g) Be aware that a glove may be caught and draw the hand into the grinder or buffer.

h) Wear goggles or a face shield on all grinding or buffing operations.

i) Avoid striking the side of the grinding wheel, because a sudden blow cold cause the development of a fault which might result in a broken wheel.

j) Report immediately any grinding wheel that seems to be unsafe.

k) Do not grind on the side of the wheel at any time.

l) Do not open guards to expose wheels or nuts.

m) Abrasive wheels shall be stored and used in such a manner that they will not be dropped or receive a sharp blow.

NOTE: A slight crack may cause a rupture at a later time.

n) The speed of a wheel shall conform to the recommendations of the manufacturer.

o) A firm grip shall be maintained on the work to prevent chattering.

p) A respirator shall be worn during operations that produce dust, toxic material or fine lint.

q) Soft paper (blotting type) shall be used to a wheel when mounting on a grinder arbor.

r) A tongue guard shall be provided and adjusted according to the constant decreasing diameter of the grinding wheel. The distance between guard and wheel periphery shall not exceed 1/4".

1111 Belt and Pulley Drivers

a) If necessary to shift belts while in motion, it shall be done with a belt shifter or other shifting device not with the hands.

b) Belts shall be inspected frequently and faulty lacing repaired or replaced.

c) All moving parts of belt and pulley drives located seven feet or less above the floor or working level shall be guarded.

1112 Metalizing and Sandblasting

a) In operating a metalizer, keep as much skin surface as possible protected by clothing against the deposit of free metal discharged from the gun.

b) Wear eye and face protection at all times when the metalizer is in operation.

c) Wear approved respirators when toxic metal fumes are being discharged from the operation.

d) Keep the sand blast booth closed while blasting is in operation.

e) Wear a face mask assembly with forced air supply at all times when blasting. Only workers properly appareled should be admitted to the work booth.

f) If a sand blast nozzle is not equipped with a "dead man" control, an observer shall remain outside the booth, within sight of the operator, and within reach of the valve that controls the air to the sand blast nozzle.

g) A sand blast pot shall never be left unattended while under pressure.

1113 Gears and Sprockets

All gears, sprockets and sprocket chain drives located seven feet or less above the floor or working level shall be guarded.

1114 Working in Manholes

Follow Confined Space Entry Procedures, Rule #201.

1115 Concrete Mixers

a) Mixer shall be leveled and the wheels blocked before starting the engine.

b) Before leaving the mixer or starting repairs and adjustments, the skip shall be lowered or adequately secured, the brakes set, and the power shut off.

c) Suitable guards shall be used to prevent personnel from passing under the skip when elevated.

d) Suitable personal protection as well as properly adjusted clothing shall be used while handling cement.

e) Eye protection shall be used during removal of hardened concrete from a machine. The machine shall be guarded against the accidental starting of the engine and the turning of the drum during the cleaning process.

1116 Brush Painting

a) When painting indoors, sufficient ventilation shall be maintained to remove excessive vapors.

b) When painting with lead or other toxic base paints, the hands shall be kept away from the mouth, and shall be washed before eating.

c) Smoking or open flame is prohibited when the hazard of explosive vapor exists.

d) Paint and solvent cans shall be kept tightly covered when not in use.

e) Cleaning rags, containing paint or solvent, shall be placed in suitable closed metal containers after use to reduce the hazard of fire or inhaling fumes.

f) Hazard Communication Program (Employee's Right to Know) written by Clayton Environmental Consultants, Inc. for the City of Burbank, shall be followed for use storage and handling of hazardous materials, etc.

1117 Spray Painting

a) An approved respirator shall be used where there is a hazard of vapor and mist inhalation.

Note: Protective creams will help control the hazard of skin contact.

b) Smoking is prohibited within a paint booth or the adjacent area during spray operations.

c) No electrical switch or appliance capable of producing a spark shall be used in a spray booth.

d) Employees engaged in spray painting work shall be informed of the location of the nearest fire extinguisher and their supervisor shall ascertain that they are familiar with its use.

e) Compressed air shall not be used for blowing down the interior of a spray booth. Exhaust ducts from spray booths shall be inspected and cleaned at frequent and regular intervals.

f) Air and other service lines to a staging shall be securely fastened not more than 15 feet from the working end of the service lines and independent of the workman.

g) Visible gauges or audible alarms or pressure-activated devices shall be installed to indicate that the required air velocity is maintained in spray booth.

h) A clear space of not less than three feet on all sides of spray booth shall be kept free from storage or combustible construction.

i) Filter pads shall be inspected after each period of use and clogged filter pads shall be replaced. All discarded filters shall be removed to a safe, well detached location.

1118 Rack Structures (Electric Station) Painting

a) When painting operation is near energized conductors, one or more qualified electrical employees shall remain adjacent to and in view of the work as long as painting is in progress and act as safety observers.

b) If any painter has a reasonable doubt regarding the safe performance of the work, he shall stop until the question of doubt has been satisfactorily answered.

1119 Asbestos Dust from Brake and Clutch Jobs

a) Whenever a brake drum is removed or clutch is repaired, the dust shall never be blown up with compressed air or any other object.

b) Asbestos dust shall be cleaned immediately with an industrial vacuum or the dust must be wet down and swept.

c) All asbestos dust (waste) shall be considered as a hazardous waste and shall be disposed of by approved procedures.

1201 Trench Construction

a) Wear protective hats when working in a trench.

b) Use only tools that are sharp and in good condition.

c) Keep a safe distance from other workers to avoid danger of striking them with tools.

d) Be careful to remove earth and other material in such a way that overhanging banks are avoided. If undercutting is necessary adequate bracing should be provided. The public should be restricted from all braced areas.

e) Where practical, do not place excavated material nearer than 2 feet from the edge of a trench. Otherwise, proper bracing should be provided if, in the opinion of the supervisor, it is necessary. Keep all tools, working material, and loose objects orderly and away from the shoulder of the trench.

f) Keep tools, equipment and excavated material out of open traffic lanes. Pebbles and small stones should either be continually removed from, or prevented from lodging on a hard-surface roadway where tires may pick up and throw them, causing injury or damage.

g) If possible, keep the spoil bank between workers and the traffic.

h) Provide and maintain all necessary barriers, temporary bridges and walks, warning signs, flags, flares, lights, and when necessary, watchmen and flaggers for the protection of workmen, vehicles, and pedestrians.

i) Do not go under an overhanging bank; when working near one, be very cautious.

j) If it is necessary to remove an overhanging bank, work from one side toward the center, always facing the point of danger.

k) If the walls of a trench contain glass, wire, or other sharp objects, carefully remove them at once.

l) When resuming excavation after heavy rains, inspect all banks for cracks, which may indicate earth movement and the probability of cave-in.

m) Require the person in charge to make frequent inspection of the sides and rim of all open trenches to guard against cave-in. Earth-moving equipment should be operated from a position that will not imperil personnel or property by a cave-in due to vibration, stress, or dead weight.

n) When making tunneled openings, be certain that the soil either is compact enough to prevent cave-in, or is suitably braced.

o) If it is absolutely necessary to work above an over-hanging bank, use a safety belt and a lifeline, with a strong helper nearby to assist in an emergency.

p) If caught in a landslide, jump or run up the bank, never down.

q) Hold impact tools to be struck or sledged by another workman by tongs or tool holder, and not by hand.

Excavation Rule # 137 in General Section regarding Trenching shall also be followed.

1202 Trenching Backhoes

Never attempt to oil or grease the mechanism or to repair or adjust any moving part of a trenching equipment while it is in use; only qualified personnel shall operate it.

1203 Shoring

Proper shoring cannot be reduced to a standard formula. Each job is an individual problem and must be considered under its own conditions. The following are general precautions:

a) Do not take changes that may lead to injury or work stoppage.

b) Either use tight sheet shoring to guard against the caving in of sandy soil or loose material when the depth of the trench exceeds 4 ft., or cut back the bank to a safe angle of repose. Keep shoring at or near the bottom of the ditch as it is excavated, and follow with bracing.

c) Use closely placed plank shoring to guard against cave-in by a soil that is saturated with water, subject to vibration, in a refill area, or over five feet deep.

d) In hard, clay, rock, or stable soil, use vertical planking, braced at intervals against the walls to shore trenches.

e) Extend shoring of any type below the bottom of the trench whenever possible and brace it thoroughly either with screw jacks or by timbers placed at right angles to the shoring and rigidly cleated and screwed or wedged in place.

f) Use only full sized lumber that is sound and straight.

g) Install the upper braces or screw jacks first and remove them last for best protection.

h) Be aware that trench dimensions, soil stability, variable weather and moisture conditions, proximity of other structures, weight and placement of soil and equipment used on the job, and sources of vibration are other important factors in choosing the type of shoring to use, if any. The decision must rest with the engineer or supervisor.

Handling

Because handling pipe is not job for an amateur, only trained and skilled men using suitable and adequate equipment should be given the assignment. Successful, safe completion of work involving pipe handling also rests on following a proved method; do not take undue risks with the safety of the crew by trying unconfirmed short cuts, because the time saved is not worth the chance of a serious accident. These tested procedures for handling pipe should be carefully followed:

a) Take the utmost care to see that members of each crew work together in moving pipe by hand. Accidents sometimes result because one man starts to lift or lets go of the load before the others are ready. The use of standard signals is recommended.

b) Use a U-shaped carrying bar, carrying tongs, or pipe sticks that are adequate for the pipe's size and weight; do not use makeshift tools. Pipe over 8 inches in diameter should be handled with mechanical aid.

c) Take a firm grip on the lifting bar or tongs, and be sure the hold will not slip.

d) When lifting or lowering a weight, bend the knees, placing the load on the leg and thigh muscles, not on the abdominal and back muscles; keep the back fairly perpendicular.

e) Lift and lower at a given signal by the man in charge, so that all members of a crew move together. Avoid sudden starts or stops.

f) Skids should be of ample strength, and should be securely placed.

g) When unloading pipe from trucks or cars, lower individual pieces by snubs all the way down the skids.

h) Do not stand between the skids while pipe is being powered.

i) Before snubbing operations are begun, inspect the ropes carefully for defects.

j) Wear gloves for all snubbing operations, as slipping rope may cause burns on bare hands.

k) Take every precaution to prevent the uncontrolled rolling of pipe. Use wood chocks when necessary.

l) When manually lifting or lowering pipe in a trench, use two or more rope slings, looped under the pipe, and handle from each side of the trench. To prevent men from being pulled into the trench by a heavy pipe, anchor one end of each rope sling to a massive object, such as a truck.

m) When aligning pipe in the trench with either manual or mechanical power, keep hands and fingers away from ends of pipe and other substructures that may cause injury by crushing.

n) Govern crane operations by the signals of a qualified crewman only.

o) Never attempt to catch and hold a length of rope that appears to be slipping from a sling handled by a crane or hoist.

p) Be alert to unsafe conditions of trench sides when measuring, testing, or inspecting pipe in place on a trench bottom.

q) When cutting sections of pipe, keep feet in the clear and use adequate blocking, chocks, or pipe vises to prevent pipe movement during the process. Wear safety goggles.

r) Keep tools and appliances in good condition for the handling, cutting threading, or treatment of pipe. Use the right tool for the job.

s) Do not let tools or materials become stumbling hazards where pipe is being handled.

t) Avoid short cuts and makeshift methods that may increase the hazards of handling pipe.

1205 Storing

a) Small pipe should be stored in racks according to lengths and sizes.

b) Pipe should always be blocked to prevent it from rolling of falling.

c) Threaded pipe should be handled with care, for threads are sharp and can easily cut the flesh.

d) Pipe large than 2 in. in diameter should be stacked in storage with spacing strips placed between each row.

e) Each row of stacked pipe should be arranged and blocked to prevent its rolling from the pile. All blocking should be reasonably permanent material, such as chemically treated wood.

f) A pipe unit should never be withdrawn from a lower row.

g) In pipe storage areas, or where allied pipe material is handled by a crane, men should be conversant with the signals used by the operator and be careful to stay clear of the load's pat; standard signals only should be used.

h) Pipe yards and walkways should be maintained in a clean and orderly manner at all times.

1206 Lead and Caulking Compound Melting and Handling

Lead shall not be used for soldering water pipes.

1207 Barricades and Warning Signs

a) Warning signs should be placed well ahead of construction or repair areas to warn traffic of the hazard.

b) Suitable barricades or other warning devices must be placed far enough from work areas safely and suitably to divert both foot and vehicular traffic.

c) The work area should be protected by barricades, barriers, or planks to provide a safe working space. Flaggers to direct and slow down traffic may be essential in some areas. Where trucks or air compressors are used, they should be stationed between the work and the traffic.

d) During periods of reduced visibility, suitable, adequate lighting should be used in addition to other protective measures.

e) Adequate barriers, barricades, lights, and signs should be placed to warn and divert traffic during periods in which no work is in progress. More than one light should be used for each job; reflecting tape on barricades may reduce the number of lights required.

f) The construction and placement of warning devices should conform to local traffic requirements and regulations.

1208 Pumping Stations

Danger is always present where machinery, such as pumps and motors, is operating and where high-voltage electricity is used. Undoubtedly, pumping station operators have the highest respect for the hazards involved in their occupation. Unfortunately, familiarity tends to breed carelessness and complacency. Constant attention and alertness is the best way to avoid injury. Never be caught off guard. Carefully follow the safety precautions presented in this section.

1209 Oiling

a) Stop machinery before cleaning, oiling or adjusting it.

b) Lock the switch gear so that no one can start a machine being worked on.

c) Before starting a machine, be certain that personnel are clear of danger and that working parts are free to move without damage.

d) Apply enough oil or grease to give good lubrication without overflow.

e) Take advantage of each lubrication to inspect the condition of all visible machine parts; report unsafe conditions at once.

f) Replace all guards immediately after lubrication and before starting the machine.

g) Never point a grease gun at anyone or shoot grease into the hand.

h) Take sufficient time to handle tools properly.

i) Never leave tools where someone may trip over them.

j) Where machines or machine parts must be lubricated while in motion, the lubricant fittings should be located at least 12 in. from dangerous moving parts, unless a pipe extends from the fitting outside a guard.

1210 Repairs and Solvents

a) Lock the controlling switch gear before beginning work, so that the machinery cannot be started by another person.

b) Place substantial blocking under any equipment suspended or supported by jacks or a chair hoist before commencing work.

d) Use only solvents having flash points of 100o F or higher. (Petroleum solvents, such as Stoddard solvents and kerosene, have high flash points and are sufficiently effective for the cleaning operations involved in the maintenance of automotive equipment. The volatility of such agents is low enough to prevent reaching hazardous concentrations in workrooms of ordinary size at common temperatures.)

c) Assure proper ventilation in the work area.

e) Do not use solvents in confined places, such as tanks and pump pits, without good mechanical ventilation. (Petroleum solvents have an anesthetic action in high concentrations and all the commonly used volatile solvents are toxic to some degree. Benzol (benzene) is highly toxic, although its kindred substances, tuluol (toluene) and oxylol (xylene) are less toxic and therefore, less dangerous. Wood alcohol or methanol (methyl) is a strong poison. Other alcohols vary widely in toxicity, but in general are less poisonous than methanol. Petroleum solvents, such as the naphthas, and many trade compounds, such as Stoddard solvents, are relatively non-toxic.)

f) Exercise caution in the use of solvents whose complete composition is not presented on the container. (Trace name compounds may contain benzol or other highly toxic substances. Commercial grades of relatively no toxic solvents may contain considerable amounts of highly toxic material as impurities.)

g) Do not use gasoline, carbon tetrachloride, or other highly toxic or low flash-point cleaning agents. (Kerosene, Stoddard solvents, petroleum naphthas, and methyl chloroform (1,1, 1- trichloroethane) are reasonably safe. The last-named substance in non-flammable.)

h) Keep a suitable fire extinguisher near at hand and ready for use.

i) Maintain sufficient labor and hoisting equipment on the job to handle heavy objects.

m) Keep aisles and open spaces on the floor free of tools and other objects.

n) Change clothes that become soaked with oil or gasoline rather than risk a dangerous fire.

o) Do not consider a job completed until after it has been checked to make sure that lock washers, cotter pins, and safety devices are in place.

p) Hazard Communication Program (Employee's Right to Know), written by Clayton Environmental Consultants, Inc. for the City of Burbank, shall be followed for use, storage and handling of all hazardous materials.

1211 Guards

a) Guards should be adequately secured in place in order to shield, fence, rail, enclose, or otherwise guard prime movers, power transmission equipment, and machines and machine parts. (Such procedures will protect employees against exposure to, or accidental contact with, dangerous moving parts.)

b) Guards should be provided with hinged or removable sections at places where it is necessary to change belts, make adjustments, or admit lubricants.

c) Where the guard or enclosure is within 4 in. of a moving part, the maximum opening in the screen should not exceed 1/2 in.

d) Where guards are located more than 4 in. and less than 15 in. from a moving part, the maximum opening should not exceed 2 in.

e) Standard railing guards should be placed not less than 15 in. nor more than 20 in. from moving parts.

f) The guard should be strong enough to provide real safety; guard structures should be so constructed that they cannot be pushed or bent against moving parts.

g) Guards should be removed and replaced for maintenance only when the machinery is not in operation.

1212 Electric-Switch Panels

a) Switchboards should be located and constructed in a manner which will reduce the fire hazard to a minimum.

b) Switchboards should be located where they will not be exposed to moisture or corrosive gases.

c) Adequate illumination should be provided for the front of all switchboards and for the back of those which have parts or equipment requiring adjustment, replacement, or repair.

d) Clear working space of adequate size and secure footing should be provided and maintained about all switchboards and motor control equipment.

e) Special insulating mats should be placed on the floor at all switchboards.

f) Open switchboards should be accessible only to qualified and authorized personnel and should be properly guarded or screened.

g) All electrical equipment, including switchboard frames should be well grounded.

h) Permanent and conspicuous warning signs should be provided for panels carrying more than 600 V.

i) Areas screened off because of high voltage should be provided with locks that open from the inside without keys.

j) Lock switches should be open and properly tagged when men are working on equipment.

k) Fully enclosed, shockproof panels should be used when possible; such equipment should be provided with interlocks so that it cannot be opened while the power is on.

1213 Handling and Use of Chlorine

Refer to Rule #925, Generation Station Section, for handling and use of chlorine

1214 Water Meter Mechanics

a) When repairing and rebuilding water meters, see that all hand tools are in good condition.

b) When using screwdriver to work on small assemblies, hold the part steady on the bench, table, or vise --never in the hand.

c) Guard against eye injuries when grinding or buffing meter parts or cases. Goggles or face shield shall be worn when grinding, chipping, buffing, or doing any work that endangers the eyes.

d) Two workmen shall not use the same grinder or buffer at the same time.

e) Keep hands in clear to prevent fingers from being injured when lining up meters on test bench.

f) When mechanical handling equipment is used on larger sized meters, see that hoist equipment and circuits are in good shape.

g) When handling small meters, keep hands free of oil or grease, and use all other precautions to avoid dropping meter on feet or toes.

h) When using compressed air to blow out meter cases and gear trains, meter repairmen shall protect their eyes, and under no circumstances shall the air blast be pointed in the direction of another person.

i) Meter repairmen whose duties require that their hands be immersed in cold water for a long time shall use a protective cream to prevent irritation from this source.

j) Repairmen shall keep their machines and tools clean and stored in proper place, and at the end of the shift shall leave them in this condition.

j) Examine tools and keep them in safe working condition.

k) Secure goggles within easy reach, and wear them when eye protection is needed.

l) Keep goggles within easy reach, and wear them when eye protection is needed.

k) The floor around machines and other work areas shall be kept free of all obstructions which might become stumbling or slipping hazards.

l) Horseplay or distracting repairperson's attention while using machine is prohibited.

m) Workmen shall see that all guards are in place before starting machinery.

n) Do not use the hands or body as a brake to stop a moving machine part even when the power has been cut off.

1215 Plumbers and Pipefitters

a) Loose pipe shall not be left in traffic aisles.

b) Suitable protective equipment shall be used whenever the hazard of flying chips, scale, or splashing of hot metal is present.

c) Gloves shall not be worn while using power operated threading machines, and clothing shall be closed fitting to minimize the hazard of becoming entangled.

d) Lead melting operations shall be performed at a location and in a manner to minimize the hazard of lead fumes or the accidental contact with molten lead.

e) The ladle and cold lead shall be preheated to insure the absence of moisture.

Note: Explosions of a lead pot are caused by the admission of wet material into the molten lead.

1216 Pipe Installation

a) Every manhole, vault or other confined space shall be tested for hazardous gases and oxygen deficiency with approved instruments prior to entry and at intervals frequent enough to insure a safe atmosphere. A written record of such tests shall be kept at the job site. Also, follow Confined Space Entry Procedures, Rule #201.

b) Pipe shall be blocked or otherwise prevented from rolling into the trench or from becoming a hazard while awaiting installation.

c) Slings or clamps shall be placed to minimize the hazard of shifting weight.

d) Pipe tongs shall not be used unless adequate for the work properly adjusted to the pipe, and with the clamp surface free of foreign material. Defective pins, keys, or other parts shall be promptly repaired or replaced.

e) Spuds or drift pins shall be used in lining up flanges. In backing off flanges, a pipe or bar shall be used to catch the flange. Heavy flanges shall be supported by a hoist or blocking during fitting and removal operations.

f) Cast iron pipe shall be cut by a wheel cutter, demolition saw or gulli saws.

g) Proper protective measures such as face shields, gloves, adequate clothing, shirt sleeves rolled down, and high top shoes shall be used when melting or pouring molten lead.

h) Lead melting operations shall be done in a manner to minimize the spilling of molten material. Cold lead, ladle, or mold shall be preheated to remove moisture.

Note: Explosions of the lead pot are frequently caused by the admission of wet material or water into the molten lead.

i) When pouring lead, the workman's footing shall be secure. A position back of the bell or sleeve opening shall be taken whenever practicable. The path between the lead pot and the pouring location shall be as clear as possible.

Note: A small quantity of oil will help to reduce the hazard of moisture in the joint.

j) Any extension to a ladle handle shall be solid or closed to prevent the trapping of moisture.

Housekeeping

High standards of housekeeping are conducive to safety practices and the following basic requirements shall be observed:

a) Adequate lighting

b) Clean and well-operating machine equipment and tools.

c) Clean and orderly working areas to permit freedom of operation.

d) Adequate tool storage and work bench facilities.

e) Sufficient waste containers for disposal of wastes.

Tools, Equipment and Machines

a) Properly designed tools, equipment and machines shall be supplied and used on every job.

b) Forklift, truck, and other types of power-driven material handling equipment shall be operated only by persons who have qualified as operators. Forklift operating rules shall be posted and a copy of the rules shall be given to operators to read and follow.

c) Bridge plates used to bridge space between truck doors and platforms shall be immobilized to prevent shifting or falling.

d) Use the proper tool or equipment for a job. Inspect it before using and immediately report any broken or defective tools or equipment.

e) Unshielded sharp-edged tools shall be stored in a safe place and never carried in pockets.

f) Check before using all material handling devices such as ropes, slings, wire ropes, cleats, dogs.

g) Avoid lifting from an awkward position.

h) When lifting from floor or ground, keep back as straight as possible, bend the knees and lift with leg muscles.

i) When lifting from shelf or table, bring the object as close to the body as possible to avoid unbalanced position. Keep back straight and lift with leg muscles.

j) When lifting with a partner, synchronize movements so that both are lifting and setting materials at the same time.

k) When carrying stacked material, arrange load so as to permit full view when carrying.

l) In carrying a long object, such as a board or pipe, keep front end above head height, where possible.

m) When two persons are carrying a long object, it should be held level by both and on the same side of the body.

n) Avoid over-reaching. Stretching may result in falls or strains.

Receiving and Storage

Warehouse personnel performing duties of receiving in other sections of the Department shall strictly comply with the safety regulations covering that section.

a) All materials received and stored which arrive in a nailed container will be opened with nail puller only, and nails disposed of in rubbish container. Under no circumstances will containers be pried open and nails bent over with hammer.

b) All materials to be stored shall be kept clear of all aisles and exits.

c) Extra care should be exercised in stacking, particularly when in dunnage. The dunnage should be so sized ad placed as to fit within the limits of the stockpiles, thereby eliminating the hazards of protruding ends.

d) In storing of materials, whenever at all practical, interlocking or the cross-tie method of stacking shall be used.

e) Block all reels and cylinders to prevent rolling.

Lifting and Carrying

a) Before lifting object, size it up to determine if it can be lifted and carried safely.

b) Wear gloves whenever necessary.

c) Ask for help when handling heavy or bulky objects.

d) Wipe off all greasy or slippery substances from hands or material before lifting.

e) Be sure to have a good footing.

f) Do all lifting with smooth and even motions.

1401 General

a) The floor shall be kept free of chairs, wastebaskets, telephone cords, electric extension cords, cartons or any other articles which are tripping hazards.

b) Drawers of desks, file cabinets and cabinet doors shall be kept closed when not in used.

c) Employees shall not sit on the edge of a chair nor tilt back when sitting in a straight chair.

d) Only one drawer of a file cabinet shall be pulled out at a time to prevent over-balancing.

e) Only approved ladders shall be used to reach materials.

f) Materials shall be properly stored to prevent falling. Heavy objects shall be placed on lower shelves.

g) Broken glass and other sharp objects shall not be placed in waste paper containers.

h) Loose fitting clothing, dangling bracelets, etc., shall not be worn while operating power-driven machines.

i) Paper cutter blades must be lowered after use.

j) Portable electric heaters and fans shall be securely placed at least seven feet above the floor. If placed lower, they shall be guarded and positioned to preclude injury to employees or upset of the appliance.

k) Safety razor blades shall be used only with proper holders. Razor blades shall be kept in suitable containers.

l) Doors with glass panels shall not be opened or closed by pressing against the glass.

m) Office equipment and appliances shall be maintained free of slivers, burrs, or other conditions which might cause an accident or personal injury.

1402 Stairways, Doors, Landings and Halls

a) Areas shall be kept free of debris.

b) Employees shall keep to right in hallways, going around corners and when passing through double swinging doors.

c) Handrails shall be used when ascending or descending stairs.

d) Employees shall not run in hallways, or stairways or around corners.

1403 Meter Reading and Collection

a) An approved type ladder or other safe support shall be used when it is necessary to climb to an elevated position.

b) Upon entering a cellar, basement, stairway or similar enclosure through an opening provided with a closing device, the opening must be properly guarded.

c) Regularly used walkways and gates shall be used.

d) If unfriendly animals are encountered, the place where they are kept shall be noted in meter books and where determined necessary, arrangements shall be made with the customer to remove or confine the animal.

SECTION 15 - FIRST AID AND CARDIOPULMONARY RESUSCITATION (CPR)

1501 Introduction

The material in these section is intended to act as an overall guide to first aid activities. It is not designed as a self-teaching course, but merely reviews some aspects of first aid techniques for those who have received training in first aid.

The information given is very generalized. Specific action which must be taken at the scene of an emergency cannot be predetermined and will necessarily be modified by the situation. It is important that employees be familiar with the contents of this section and emergency procedures so as to be better prepared to assist fellow employees in the event of an accident. Details for first aid treatment may be found in the American Red Cross Text Book.

1502 General

a) Employees shall be familiar with the basic techniques for first aid so that they may provide emergency treatment to fellow employees. Personnel should be knowledgeable of the treatment for traumatic shock, means of giving artificial respiration and control of bleeding. Preplanning for a potential emergency situation is most valuable. All employees should be aware of the medical services available and how to obtain them.

b) Personnel engaged in overhead line work shall know the essential elements of pole top rescue. They should also be familiar with resuscitation techniques and how to apply such techniques in an elevated position.

c) Employees shall be familiar with the location of first aid kits, the contents and the instructions given with the first aid kit. They shall learn to use this equipment so they can render treatment when needed. Except for minor injuries, the service of a physician shall be obtained.

d) The contents of the first aid kits shall be inspected each week and expended items replaced.

e) Properly equipped and approved first aid kits (in a weatherproof container) shall be maintained on trucks, in attended plants or stations, and such other location as may be considered advisable. A First Aid kit shall be available on every construction project, or any other small duration job for immediate use, and shall contain the following minimum supplies:

*NOTE: Units with asterisks may be substituted with any item from the approved list of first aid materials to meet the specialized needs of a particular kit.

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d) The contents of the first aid kits shall be inspected monthly or more frequently, and expended items be replaced. A record of inspections will be maintained.

e) Properly equipped and approved first aid kits (in a weatherproof container) shall be maintained on trucks, in attended plants or stations, and such other location as may be considered advisable. A First Aid kit shall be available on every construction project, or any other small duration job for immediate use, and shall contain the following minimum supplies:

*NOTE: Units with asterisks may be substituted with any item from the approved list of first aid materials to meet the specialized needs of a particular kit.

10-UNIT KIT

1 - 10 unit box, empty
1 - triangular bandage
1 - 2" bandage compress
1 - 4" bandage compress
1 - green soap antiseptic swab
2 - adhesive bandage, 1" x 3-1/2"
1 - eye wash (double sized unit)
*1 - adhesive bandage, 3/8" x 1-1/2"
1 - tweezer and scissors
1 - safety pin
1 - eye dressing packet
1 - sterile gauze pad, 2" square
1 - sterile gauze pads, 4" square
1 - adhesive tape roll, 1" wide

24-UNIT KIT

1 - 24 unit box, empty
2 - triangular bandage
1 - 1" bandage compress
2 - 2" bandage compress
2 - 4" bandage compress
2 - 3" x 3" gauze pads
1 - 4" x 4" gauze pad
2 - green soap antiseptic swab
1 - eye wash (double sized unit)
2 - adhesive bandages, 1" x 3-1/2"
*2 - adhesive bandages, 3/8" x 1-1/2"
*1 - fingertip bandage
*2 - adhesive bandage patches
*1 - knuckle bandage
1 - tweezer and scissors
1 - safety pin
1 - eye dressing packet
1 - sterile gauze pad, 2" square
1 - sterile gauze pads, 4" square
1 - adhesive tape roll, 1" wide

APPROVED ITEMS FOR FIRST AID KITS

16 - band-aid, regular 1 x 3-1/2
40 - band aid, small 3/8 x 1-1/2
16 - bandage, adhesive patch, 7/8" square
16 - bandage, adhesive patch, 1-1/2 square
6 - bandage, adhesive large 2" x 4"
10 - bandage, adhesive for fingertips
8 - bandage, adhesive for knuckles
4 - bandage compress, 2" pad
2 - bandage compress, 3" pad
1 - bandage compress, 4" pad
1 - bandage triangular
10 - bee and insect sting swab
3 - eye wash (double sized unit)
10 - green soap antiseptic swabs

VEHICLES

1 - ten-unit kit

SHOPS

1-5 employees - 1 ten unit kit
6-20 employees - 1 24-unit kit
21-over - add one 10-unit kit for every 5 employees

OFFICES

1-20 employees - 1 ten-unit kit
21-50 employees - 1 twenty-four unit kit
51-over employees - add one 10-unit kit for every 10 employees

1503 Employee Training

Refer to Administrative Procedure V-5, "First Aid and CPR Training."

APPENDIX A

MANHOLE/VAULT/BOILER ENTRY AND MAINTENANCE PERMIT

MANHOLE NUMBER: _____

LOCATION OF WORK: _____

DESCRIPTION OF WORK: _____

ELECTRIC CIRCUIT NUMBER: _____

EMPLOYEES ASSIGNED: 1. _____ 4. _____

2. _____ 5. _____

3. _____ 6. _____

OUTSIDE CONTRACTORS: _____

ENTRY DATE: _____ ENTRY TIME: _____

ISOLATION CHECKLIST:

Blanking and/or Disconnecting

__ Electrical
__ Mechanical
__ Other _____

HAZARDOUS WORK:

__ Burning
__ Welding
__ Brazing
__ Open Flame
__ Other _____

FIRE/SAFETY PRECAUTIONS: _____

ATMOSPHERIC GAS TESTS:

TESTS PERFORMED		READING		
TIME	PERFORMED BY:	OXYGEN (O_2%)	FLAMMABILITY	TOXICITY

SAMPLING EQUIPMENT USED: _____

PERSONAL SAFETY:

__ Ventilation
__ Respirators
__ Clothing
__ Head, Hand, Foot Protection
__ Shields
__ Lifeline and Harness
__ Lighting
__ Communications
__ Qualified Employee
__ Emergency Egress Procedures

REMARKS: _____

WEATHER CONDITION: _____ AMBIENT TEMPERATURE IN MANHOLE: _____

CABLE CONDITION:

FEEDER #	TEMPERATURE	TESTED BY	SPLICES OR TERMINATIONS

ELECTRICAL EQUIPMENT CONDITION:

TANK	TEMPERATURE	OIL LEAK	PRESSURE	TESTED BY

MANHOLE OR VAULT CONDITION:

(WATER, LARGE CRACKS, AIR, ETC.) _____

COMMENTS, OR OTHER ACTION TAKEN:

_____

_____

_____

SUPERVISOR OR AUTHORIZED REP.: _____

APPENDIX B

OPERATING ORDER - BOILER ENTRY PROCEDURE

FIRE SIDE

1. Initially, the boiler shall be purged for five minutes, just prior to opening the boiler. Thereafter, natural ventilation will occur.

2. Obtain clearance on at least the following:

   A. Boiler draft fans - breakers racked out and locked.

   B. Igniter and main gas shutoff valves - valves shall be shut, tagged and locked. Units with quick closing trip valves shall be shut and tagged. Gas fuel regulating valves and individual gas burner valves shall be shut and tagged. At least one vent opening shall be provided and vented downstream of the main and igniter shut-off valves. These valves shall be open, tagged and locked.

   C. Boiler auxiliary steam root valve shut, tagged and locked.

3. Individual gas valves to igniters shall be shut and tagged.

4. Instrument Department Personnel, or persons so designated, will test and record combustible and oxygen levels at the following points:

   A. Fire box

   B. Top of furnace

   C. Penthouse

   Instrument Department Personnel, or persons so designated, shall perform and record the above test results each morning before entry and after lunch break, prior to re-entry.

WATER SIDE

1. Boiler water drained.

2. Obtain clearances on at least the following:

   A. Boiler feedwater pumps - breakers racked out and locked.

   B. Boiler main feedwater bypass and stop valve - shut, tagged and locked.

   C. Boiler blow-down valves - shut, tagged and locked.

   D. Boiler main steam bypass and stop valve - shut and tagged.

E. Boiler superheater drains discharging to blow-down tank, shall be shut and tagged (Magnolia Plant)

Instrument Department Personnel, or persons so designated, test and record combustible and oxygen levels in the steam drum and mud drum (if applicable) before entry.

_____

Wilson L. Westbury, Power Production Supt.

APPENDIX C

POWER PLANT EQUIPMENT CLEARANCE

The following Steam Plant equipment: _____

_____

was blocked out by _____(Engineer) at ____ M _____ 19____

for the benefit of:

Maintenance: _____ (Employee's signature)

Electrical: _____ (Employee's signature)

General Plant: _____ (Employee's signature)

while performing _____

_____

_____

_____

The block was effected by:

Opening remote switch	Opening or closing valves
by _____	_____
Opening switchroom breaker	_____
by _____	_____
Removing heater strip or fuse	_____
by _____	_____

The work was completed at _____ M _____ 19 _____ by _____

Maintenance: _____ (Employee's signature)

Electrical: _____ (Employee's signature)

General Plant: _____ (Employee's signature)

and the equipment cleared for use by _____

_____

_____ (Engineer)

City of Burbank Public Service Department Water-Light-Power

MEMORANDUM

DATE: August 7, 1990

TO: All Public Service Department Electric Distribution, Equipment, and Test Employees

FROM: Ronald V. Stassi, General Manager

SUBJECT: **NEW POLICY REGARDING INSPECTION OF ELECTRIC MANHOLES AFTER AN UNDERGROUND FAULT**

The Pasadena tragedy, in which three electrical workers perished in an electric manhole, caused us to reconsider the safety of our subject policy. By Tuesday, July 17, we were confident that the basic facts surrounding the Pasadena case were well enough established to form the basis for preliminary evaluation. Accordingly, a special meeting was held with the following in attendance:

Ronald Stassi	Bob Greenquist
Gregory Simay	Naresh Gupta
Marty Matthews	Bill Taylor
Chuck Herron	Dev Birla

Hanes Isaacs

At the meeting, we unanimously reaffirmed that the safety of our workers is our top priority, even if it means customers must tolerate longer and more extensive outages. I directed that until we have all the facts regarding the Pasadena incident, **all cables in a manhole shall be de-energized after a short circuit has occurred before sending workers in for inspection.** This memorandum is to reiterate this policy in writing and to assure that it is known to electrical field operation personnel.

Shortly thereafter, City Manager, Bud Ovrom, asked for a meeting with me to discuss the Pasadena accident. New information was available, and I reconvened the group that met July 17. The meeting was held on July 30, with the following in attendance:

Bud Ovrom	Bob Greenquist
Ron Stassi	Naresh Gupta
Gregory Simay	Bill Taylor
Chuck Herron	Dev Birla

Rick Ainsworth
(for Hanes Isaacs)

At the meeting, Mr. Ovrom was informed of our interim policy. He strongly supported our decision, recognizing the possibility of longer or more extensive outages. Even with the additional facts regarding the Pasadena incident, a considerable amount of investigation remains to be done before a final evaluation can be rendered. Specific procedures are being prepared and will be reviewed by those who attended the meeting as well as others. The interim procedures are as follows:

1. When a fault has occurred, normal procedures shall be followed in identifying and isolating the faulted section.

2. If the fault is determined to be in the underground portion of the circuit, the affected manholes shall be identified.

3. A determination shall be made of what circuits, or portions of circuits, must be de-energized in order to de-energize the cable in the affected manholes.

4. The Dispatch Center, prior to de-energizing the circuit, shall notify Police, Fire and critical customers that an outage is being planned.

5. The circuits shall then be de-energized.

6. The underground crew shall follow the appropriate entry procedures before entering the manhole.

7. The underground crew shall inspect all the cable, junctions, switches and other devices to see if there is any visible damage that may have occurred due to the fault.

8. If no damage is detected, the crew shall exit the manhole and allow the Dispatch Center to re-energize the circuits.

The trade-off is the risk of outages that will often last longer and affect more people than is presently the case. When the accident findings are available and a settled conclusion can be reached on the cause of the Pasadena deaths, we will review our policy to see if changes are warranted.

Ronald V. Stassi
General Manager

RVS:rd
90-7/25

cc: F. Fletcher
J. Hurtado
F. Ogle, IBEW Pres.
Attendees

CITY OF BURBANK

PUBLIC SERVICE DEPARTMENT

EMERGENCY ACTION PLAN

TABLE OF CONTENTS

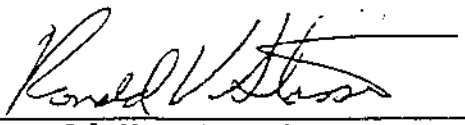
GENERAL MANAGER'S STATEMENT

In an emergency, your safety is our first and most important consideration. This Emergency Action Plan outlines the actions you should take during emergencies to ensure your safety. Of particular concern are emergencies due to fires, chemical spills and earthquakes.

The many variables surrounding an emergency are often unpredictable. This Plan provides guidelines and procedures that you would need to apply as specific circumstances require. Additional actions may also be necessary. Making that judgment will be my responsibility, or that of my designee, at the site.

The time to prepare for an emergency is now. Be familiar with the overall surroundings of the work environment, including potential hazards. Learn the automatic responses to each type of emergency. Take the time to read and understand the contents of this plan.

The Field Services Manager is responsible for arranging rehearsals for the plan and coordinating them with the PSD Safety Office. The PSD Safety Office is responsible for reviewing the plan; if anyone has suggestions for improvement, please let the PSD Safety Coordinator know. Remember, the key to dealing with an emergency is preparedness.



Ronald V. Stassi
General Manager
Public Service Department
July 1991

1.0 OVERVIEW OF THE PLAN

Emergency preparedness recognizes that emergencies can arrive with little warning, quickly worsen and cause great destruction. Some emergencies may involve PSD's facilities without immediately endangering the wider community. The most common examples would be a building fire or a hazardous chemical spill. The people primarily at risk would be PSD employees and their visitors. Other emergencies can result from a region-wide disaster such as a severe earthquake or the release of a poisonous gas, such as chlorine, over a wide area. In any event, you must know how to take care of yourselves and PSD facilities as best you can. Only then will you be in a position to help others.

1.1 FOCUS OF THE PLAN

This Plan focuses on responding to what are the three most likely emergencies that could occur at PSD: **Fires, Chemical Spills,** and **Earthquakes.** If you know how to respond to these emergencies, chances are you will know how to respond to other emergencies, such as an airplane crash in the PSD Yard.

1.2 MANAGEMENT OF THE EMERGENCY PLAN

The General Manager serves as PSD's Emergency Control Officer during an emergency and the Division Managers of the affected area serves as his Deputies. They are responsible for the overall management of PSD's emergency response. Their primary management objectives are:

1. Help the Fire and Police Departments minimize deaths and injuries.

2. Carry out emergency shut-down and evacuation.

3. Maintain security of the facilities.

4. Minimize property damage and loss.

5. Recover from the emergency with minimum interruption to PSD operations.

All will respond to the direction of the Emergency Control Officer or his designee. In some circumstances, the Emergency Control Officer may be required to yield his authority to an Incident Commander from the Fire Department.

1.3 EMPLOYEE'S RESPONSIBILITY

During emergencies, communications may be disrupted and you may lose contact with one another. To ensure a quick and safe evacuation when an emergency arises, you are to:

1. Preserve yourself first.
2. Evacuate to predetermined Evacuation Zones.
3. Confirm your location and safety with management upon evacuation.
4. Await instructions from management or emergency response personnel.

Each of these actions will now be discussed.

Preserve Yourself First

The most important thing we can do for our self-preservation is not to panic, be calm and use common sense. During an earthquake, for example, follow the GUS Rule: Get Under Something!

Evacuate to a Predetermined Evacuation Zone

PSD has been divided into 13 Work Zones, with each zone having an assigned Zone Warden and alternate. When it is necessary to evacuate from your Work Zone, you will proceed to one of eight designated PSD Evacuation Zones.

The Zone Wardens or alternates will instruct you when to evacuate and proceed to the proper Evacuation Zones. They will also assure that evacuation is proceeding in an orderly manner. They will note the locations of any injured or trapped employees and will communicate this to the Command Center, which will be located in the Field Services Office. Section 3, which presents the Emergency Evacuation Plan, defines the Work Zones, Evacuation Zones and Zone Wardens.

Confirm Location and Safety With Management

Once you are in an Evacuation Zone, you must let your immediate supervisor or Zone Warden know your presence and whether or not you are injured. If your immediate supervisor is not available, then you should inform any available manager.

Await Instructions from Emergency Response Personnel

Remain in your Evacuation Zones until released or given further direction by management or responsible emergency personnel. Depart from PSD property only after checking with your supervisor.

2.0 RESPONDING TO EMERGENCIES

When responding to emergencies, follow the four basic steps discussed earlier:

1. Preserve yourself.
2. Evacuate to a safe area.
3. Confirm safety.
4. Await further instructions.

Above all, do not panic.

2.1 RESPONDING TO FIRES

Upon discovering a fire, immediately notify the Burbank Fire Department by calling "7911" from PSD City phones, or "911" from outside public telephones. Employees who are trained in the use of fire extinguishers may try to extinguish the fire with the available fire extinguishers only if it is safe to do so. Evacuate the area if the fire cannot be extinguished or controlled by the available fire extinguishers. Follow the Emergency Evacuation Plan (Section 3.0) in vacating the building.

If the fire is located in a hazardous area, (i.e. chemical storage areas, Power Plant structures which have thermal insulation containing asbestos, or the hazardous waste area), vacate the area immediately. Employees who are trained in the use of self-contained breathing apparatus (SCBA) and have had hazardous communication training on the materials affected, may try to extinguish the fire with the available fire extinguishers, but only after putting on the SCBA and only if it is safe to do so. If the fire cannot be controlled safely, evacuate the area immediately. In most circumstances, fire fighting should be left to Fire Department Personnel. Follow the evacuation procedures outlined in the Emergency Evacuation Plan.

After the area has been safely evacuated, notify the Guard House. The Guard will direct emergency personnel to the affected area, will notify the PSD Safety Coordinator and will notify any affected managers.

2.2 RESPONDING TO CHEMICAL SPILLS

Upon discovering a chemical accident, immediately notify the Burbank Fire Department by calling "7911" from PSD City phones at a safe location, or "911" from outside public telephones.

Follow the evacuation procedures outlined in the Emergency Evacuation Plan (Section 3.0). Then secure the area affected by the chemical spill by isolating it and denying entry to unnecessary personnel. Table 1 shows the location of major chemicals used in PSD, along with emergency phone numbers. After the area has been safely evacuated, notify the Guard House. The Guard will direct emergency personnel to the affected area, notify the PSD Safety Coordinator, and will notify any affected managers.

TABLE 1 - LOCATION OF MAJOR CHEMICALS USED IN PSD

1. Power Plants

Chemical Name:	Location:	Amount:
a) Sulfuric Acid	Olive Plant Demineralizer	2,500 gallons
	Olive #1 Cooling Tower	2,500 gallons
	East of Magnolia #2 Cooling Tower	2,500 gallons
b) Sodium Hydroxide	Olive Plant Demineralizer	2,000 gallons
c) Chlorine	Olive #1 Cooling Tower	2 tons
	Southwest of Magnolia #3 Cooling Tower	4 tons
d) Betz 22k Chemical	Olive #1 Cooling Tower	800 gallons
	Magnolia #2 Cooling Tower	400 gallons
e) Betz 3021	Olive #1 Cooling Tower	800 gallons
	Magnolia #2 Cooling Tower	400 gallons
f) Hydrogen Gas (Compressed)	Olive Plant	7,750 cubic feet
	Magnolia Plant	7,750 cubic feet

2. Field Services

Chemical Name:	Location:	Amount:
a) Solvents/Paints	Southwest side of Paint Shop (lacquer thinner)	1-55 gallon drum
	Southwest side of Paint Shop (mineral spirit)	1-55 gallon drum
b) Propane	Southeast corner of Paint Shop	1,200 gallons

3. Warehouse

Chemical Name:	Location:	Amount:
a) Paints	Warehouse Paint Room	1,400 gallons
b) Solvents	Warehouse Paint Room	150 gallons
c) Acetylene	Warehouse Storage Room	2,000 cu. ft.
d) CO_2	Warehouse Storage Room	480 cu. ft.
e) O_2	Warehouse Storage Room	4,980 cu. ft.

4. Water Production

Chemical Name:	Location:	Amount:
a) Chlorine	Palm Avenue Station 300 North Sunset Canyon	300 pounds
	Reservoir #5 3200 Scott Road	300 pounds
	PSD Forebay 320 North Lake	300 pounds
	Valley Pumping Plant 2030 North Hollywood Way	1800 pounds
b) Calcium Hydrochloride	Valley Pumping Plant 2030 North Hollywood Way	400 pounds

Emergency Phone Numbers:

Chem Trec - (800) 424-9300
Chlorine Institute (202) 775-2790
EPA 24 hour National Response Center - (800) 424-8802 or (202) 426-2675
Western States Chemical Supply Corporation - (800) 255-6422

5. Electrical Division

Chemical Name:	Location:
a) PCB Contaminated Oil	Found in some electrical equipment throughout the City. Detailed records available with the PCB Coordinator.

6. PSD Yard

Chemical Name:	Location:
a) PCB Contaminated Waste	PCB Shed

NOTE: Material Safety Data Sheets for all of the above chemicals are available within the division they are listed under. One set of each MSDS is kept with the PSD Guard and in the PSD Safety Office.

2.3 RESPONDING TO EARTHQUAKES

In the case of a natural disaster, such as a major earthquake you have additional responsibilities. Other than the personal responsibility of self and family, you have a responsibility to the public, especially those who depend upon the services you provide: water and electric power. All efforts will be coordinated and directed towards that goal. You may be assigned duties that are not within your regular scope of work during the emergency and your work hours may vary. Every attempt will be made to consider your own personal and family needs, however some inconveniences can be expected.

The following instructions are designed to assist you in case a major earthquake strikes Burbank. Also, be sure to follow the evacuation procedures outlined in the Emergency Evacuation Plan (Section 3.0).

Earthquakes That Occur During Working Hours

During the shaking, keep calm and maintain a clear head.

If Indoors during an earthquake, follow these guidelines:

Stay Indoors if already there. The most dangerous area is just outside the building. You should not attempt to evacuate during the shaking.

Grab Your Earthquake Kit and Take Cover under sturdy furniture or work table. Hang on to the legs, and if it moves, move with it.

Position Yourself near the center of the building when possible. Favorable alternative locations are adjacent to interior columns, major interior structural walls or other structurally strong building areas away from the exterior walls.

Try to Keep Away from all glass (windows, overhead lights, etc.) if possible. Cover your head with a binder, trash basket or any other protective material.

Protect Yourself. Seek immediate protection by taking cover. There is an extreme danger from falling debris during this phase of an earthquake.

Stay Calm. Stay alert and aware of what is happening around you. Remain protected and wait for shaking to stop. There may be after shocks which may cause ceiling tiles, light fixtures or other material loosened by the initial shock to fall, therefore, remain protected. When it is safe, evacuate and move to the designated Evacuation Zones.

If Outdoors during an earthquake, follow these guidelines.

Remain Outdoors. Do not try to enter buildings.

Stay in the Open. Move away from the buildings, a minimum distance equal to the height of the building. Stay away from overhead power lines and poles.

Sit or Lie on the ground to maintain your stability.

If Driving

Slow the car to a safe stop and remain inside the car.

If Power Lines Fall on your car, do not panic. Stay inside the car. If you try to exit the car, you could be electrocuted as you provide a direct path to ground for the electricity.

After the Shaking

If shaking stops and you or your Zone Warden feels it is safe to evacuate, evacuate the building. If designated exits are blocked, follow an alternate safe exit route. Move to, and remain in, the designated Evacuation Zones (Section 3.0). Stay away from the damaged buildings. If your designated Evacuation Zone is blocked or not accessible because of broken glass, damaged buildings or exposed electrical lines, move to a different and safe zone.

Wait in the designated Evacuation Zone, or alternate Zone, to permit your supervision or emergency response personnel to account for you and to assure of your safety.

When the conditions have initially stabilized, you may be directed to report to **Field Services Division Management Personnel** (unless you have been previously been assigned disaster duties by your Division Management Personnel). Field Services will be able to schedule and direct the available personnel as required and will be in contact with the Emergency Operation Center (E.O.C.) for coordinating Departmental needs. **The Field Services Manager is not scheduled for Citywide E.O.C. duty and is assigned as the PSD Emergency Coordinator.**

If you have a radio, tune in to Station KROQ, FM 106.7, for emergency broadcast information.

Earthquakes That Occur During Non-Working Hours

Should a disaster occur during your non-working hours, it is important that you first make sure that your family and home are secure. This is the time that all of your personal preparations at home will prove to be invaluable. After doing that, and if it is safe to travel, please report to your normal work location and contact **Field Services Management Personnel.** As a City Employee, your services will be needed.

3.0 EMERGENCY EVACUATION PLAN

PSD employees work in one of three general locations: the Administrative/Water Buildings, the Field Services Shops/Electric Shops/Warehouse, and the Olive/ Magnolia Plants. For purposes of evacuation planning, these locations have been subdivided into 13 Work Zones. For each Work Zone there is an Evacuation Zone to which all employees within the Work Zone would go. There are eight Evacuation Zones in all; Figure 1 shows their locations on a plot plan of the PSD Yard.

Each Work Zone has an assigned Zone Warden and alternate. The Zone Warden has several key responsibilities:

1. The Zone Warden decides whether or not to evacuate the Work Zone.

2. The Zone Warden directs the Work Zone employees to the proper Evacuation Zone in a safe and orderly manner. In some cases, the Zone Warden may have to select an alternate Evacuation Zone.

3. The Zone Warden notes the location of any injured or trapped employee and communicates this information to the Command Center.

4. The Zone Warden generally with help from available supervisors, determines which employees have successfully evacuated to their Evacuation Zone. In some cases, there may be missing employees. The Zone Warden communicates all this information to the Command Center, which is located in the Field Services Office.

5. The Zone Warden releases employees from their Evacuation Zones when authorized to do so by the Command Center.

The alternate assists the Zone Warden in these responsibilities.

Table 2 presents a list of the Work Zones, their associated Zone Wardens and alternates, the associated Evacuation Zones and alternates. Remember: If you are unable to reach your normally assigned Evacuation Zone, then proceed to the Alternate Evacuation Zone.

3.1 BEFORE THE EVACUATION

Know your Zone Warden and Evacuation Zone - Be familiar with primary and alternate exit routes. Carry out evacuation drills.

3.2 DURING THE EVACUATION

Immediately following the order to evacuate proceed with the following steps, as your personal safety permits:

1. Go to your preselected emergency exit. If your preselected exit route is blocked or involved in the emergency incident, be prepared to proceed to an alternate exit.

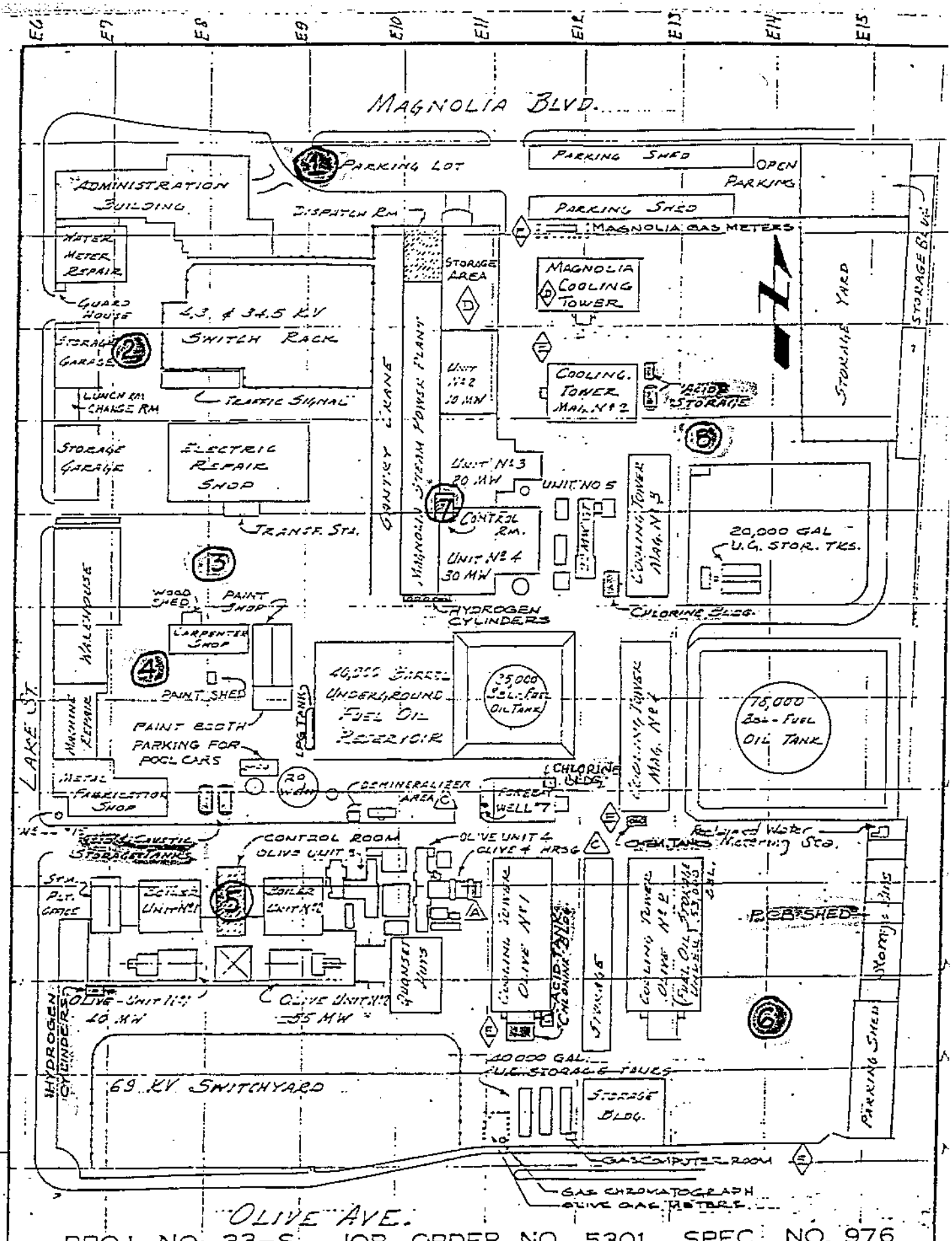
2. Stay calm. Follow the instructions from Emergency Response Personnel or Zone Wardens and proceed to your Evacuation Zones. At the time of an emergency, you may be in other than your normal Work Zone. Remain with the Work Zone you are visiting and follow the instructions of the Zone Warden. If visitors to PSD are in your Work Zone, be sure that they are properly evacuated.

3. Assemble in your Evacuation Zone. Your supervisor or Zone Warden then will determine if anyone is missing. The Zone Warden will report the names and possible location of missing employees to the Command Center. Therefore, if employees become separated and evacuate to an alternate Evacuation Zone, they should quickly, but safely confirm their safe evacuation to the Command Center. If it is safe they can then proceed to their normally assigned Evacuation Zone.

4. If you are in your normally assigned Evacuation Zone, stay there to receive instructions from Emergency Response Personnel.

5. During an evacuation, should you or an employee of your group get injured and require emergency medical assistance, immediately report to the Emergency Response Personnel or the Command Center. First aid supplies are needed for emergency medical assistance is available at the Command Center and an employee trained in first aid and CPR will provide the needed assistance.

Table 2 - Working Areas, Zone Wardens, and Evacuation Zones		
Working Area	Area Coordinator (Alternate)	Evacuation Safety Zone (Alternate)
1. 1st Floor of Admin. Bldg., West Wing (Water Engineering, Elec. Services Office & Water Meter Shop)	Ross Burke, Sr. Civil Engineer Leighton Fong, Supvg. Civil Engr.	Zone 2 - Front of Change Room Zone 1 - Magnolia Parking Lot
2. 1st Floor of Admin. Bldg., Main Portion (Customer Service, Incl. Credit, Meter Readers & Cashiers)	Bill Matta, Customer Svcs. Supv. Mike Gustin, Customer Svcs. Supv.	Zone 1 - Magnolia Parking Lot Zone 2 - Front of Change Room
3. 1st Floor of Admin. Bldg., East Wing (Power Resources, Admin. Services & IBEW Office)	Steve Maggi, Administrative Asst. George Cardenas, Elec.Engr.Assoc.	Zone 1 - Magnolia Parking Lot Zone 2 - Front of Change Room
4. 2nd Floor of Admin. Bldg., West Wing (Pwr.Systems Engrg. and Elec. Trans.& Dist. Engineering)	Sam Mahsoul, Sr. Elec. Engineer Dave Filson, Sr. Engrng. Tech.	Zone 2 - Front of Change Room Zone 1 - Magnolia Parking Lot
5. 2nd & 3rd Floors,East Wing (Gen.Mgr.Office, Div. Mgrs., Mech. Engrng. & Training Section)	Frank Miller, Mech. Engr. Assoc. Rose DeWitt, Admin. Secretary	Zone 1 - Magnolia Parking Lot Zone 2 - Front of Change Room
6. Elec. Equip. Shop & Elec.Test Shop	Hanes Isaacs, Elec. Equip. Supv. Richard Andersen, Elec.Test Coord.	Zone 3 - In Front of Warehouse Zone 2 - Front of Change Room
7. Elec.Dist.Supt. Office & Elec. Dist. Employees	Chuck Herron, Elec. Dist. Supv. Designated Supv., Line Mech.Supv.	Zone 2 - Front of Change Room Zone 3 - In Front of Warehouse
8. Warehouse	Robert Wong, Whse. Supervisor Kirt Stanford, Storekeeper	Zone 3 - In Front of Warehouse Zone 4 - In Front of Garage
9. Field Services (Fab Shop, Garage, and Office)	Bill Kaufmann, Equip. Maint. Supv. Al Juarez, Metal Shop Supv.	Zone 4 - In Front of Garage Zone 3 - In Front of Warehouse
10. Field Services (Paint Shop, U/G Line Mech. Shop & Carpenter Shop)	Bob Merlo, Paint Shop Supv. Steve Keith/Dave Hellebrandt C & M Worker/Conduit Mech.	Zone 3 - In Front of Warehouse Zone 4 - In Front of Garage
11. Olive Power Plant	Power Plant Shift Supervisor Sr. Control Operator	Zone 5 - Olive Ctr.Rm. Zone 6 - Behind O-2 Cooling Tower
12. Magnolia Pwr. Plt.	Power Plant Shift Supervisor Sr. Control Operator	Zone 7 - Magnolia Ctr. Room Zone 8 - Behind M-3 Cooling Tower
~~13. Dispatch Center~~	~~Load Dispatcher & Asst. Load Dispatcher~~	~~Zone 1 - Magnolia Parking Lot~~ ~~Zone 7 - Magnolia Ctr. Room~~ Deleted



PROJ. NO. 33-S JOB ORDER NO. 5301 SPEC. NO. 976

NO.	REVISIONS	BY	CHECK	APP'D	DATE
C	ADDED OLIVE 4 HRSG. DRAIN AREA	TLN	[illegible]	[illegible]	[illegible]
D	MAGNOLIA UNIT 1 DEMOLISHED	KWC	KWC	KWC	7-17-89

DRAWN JSH | SCALE 3/32"=1'-0" | CHECK | APP'D JDW | DATE 2-4-68

CITY OF BURBANK
PUBLIC SERVICE DEPARTMENT

YARD PLOT PLAN

DRAWING NO. AM-1085